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PROTECTIONISM AND STRUCTURAL ADJUSTMENT

Information provided by States members of UNCTAD for the annual review by the Board on protectionism and structural adjustment

Note by the UNCTAD secretariat

Addendum

Since the preparation of TD/B/1245 the attached information has been received from Chile, Cyprus, Ecuador, El Salvador, Gabon, Norway, Sweden and Turkey. The terminology used is that of the original source.

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[Original: ESPAÑOL]

1. Chile 1/

Evolución Macroeconómica de Chile en 1985-1988

A comienzos de 1985, se puso en ejecución un programa macroeconómico denominado de "Ajuste Estructural" destinado a crear las condiciones para un crecimiento rápido del producto y del empleo en un ambiente de progresiva estabilidad de precios y gradual desendeudamiento externo. Dicho programa contó con el apoyo del Banco Mundial a través de tres sucesivos créditos SAL, por un total de US$ 750 millones, los cuales terminaron de desembolsarse íntegramente -según lo presupuestado- en diciembre último. La reciente difusión de las estadísticas macroeconómicas revisadas de 1988 provee una buena ocasión para reseñar la evolución de la economía chilena en 1985-88 bajo dicho programa.

A comienzos de 1985 la economía chilena estaba aún seriamente afectada por la crisis internacional de 1982-83. El desempleo promedió el 13,9% de la fuerza de trabajo en 1984 a nivel nacional y era generalizada entre las familias y las empresas la existencia de un agudo y aflictivo endeudamiento. En los meses inmediatamente anteriores al inicio de la nueva gestión, una severa oleada de incertidumbre había detenido el proceso de reactivación económica que venía observándose desde mediados de 1983, producto de una nueva caída en el precio del cobre, de una nueva alza en las tasas de interés internacionales y de la consiguiente acumulación para los años siguientes de un volumen de necesidades de financiamiento externo que era generalmente considerado inabordable.

El Programa de Ajuste Estructural se propuso poner en marcha un conjunto de medidas realistas para dar solución duradera a los urgentes problemas de desempleo y endeudamiento, así como sentar las bases para la paulatina superación de la pobreza y el subdesarrollo. Las políticas fueron diseñadas técnicamente para alcanzar los objetivos propuestos, considerando cuidadosamente las particularidades de la realidad económica y social del país. La principal virtud del programa es que supo conquistar la confianza de la ciudadanía, sin la cual no hay programa económico que prospere. Esta confianza se fundó en el hecho de que las políticas y las metas anunciadas fueron íntegramente cumplidas: se ha aplicado puntualmente el programa anunciado y los avances logrados han sido siempre iguales o superiores a los originalmente previstos en todos los indicadores macroeconómicos de significación.

Factores de Crecimiento

El programa se propuso poner nuevamente en marcha la actividad económica a través de la exportación, la inversión y el ahorro. A continuación se presenta el cumplimiento de cada una de estas metas.

Las exportaciones de bienes pasaron desde US$ 3.659 millones en 1984 a US$ 7.052 millones en 1988 y se proyectan en US$ 7.734 millones para el presente año. Ciertamente, en ello ha influido la

1/ Las autoridades del Gobierno de Chile, además de la información que se reproduce en el presente documento, han remitido a la secretaría el texto de un comunicado de prensa del Banco Central de Chile intitulado "Evolución de la economía chilena durante el primer semestre de 1989" y un informe sobre la Evolución del Comercio Exterior correspondiente a Junio de 1989. Estos documentos están a disposición de las delegaciones interesadas para su consulta en la secretaría.

mejoría de los precios de los productos de exportación observada en los últimos dos años, pero el volumen físico (esto es, excluyendo el efecto del alza de los precios) de las ventas al exterior de productos no cupreros creció en promedio al acelerado ritmo anual de 13,5% en 1985-88. Por su parte, las exportaciones de cobre pasaron de 1.234.000 toneladas métricas en 1984 a 1.356.000 en 1988. Finalmente, las exportaciones de bienes y servicios crecieron a un ritmo promedio de 7,9% real al año en el período, pasando de constituir el 24,3% del PGB en 1984 a 37,4% en 1988 (cifras expresadas a precios corrientes).

La inversión en capital fijo (el aumento de la capacidad productiva) pasó de representar el equivalente a 12,3% del producto geográfico bruto (PGB) en 1984 a 16,3% en 1988 y se prevé que alcanzará a 17,7% en el presente año (cifras expresadas a precios corrientes). La inversión pública se mantuvo estable, en torno al 6-7% del PGB en el período. Por lo tanto el aumento de la inversión provino mayoritariamente de los esfuerzos del sector privado, alentado por su confianza en las perspectivas de la economía chilena. La inversión se ha destinado mayoritariamente a las áreas de exportación (en la fruticultura, la piscicultura, la agroindustria, la silvicultura y las industrias forestales, la minería, etc.), y sus frutos sólo recién comienzan a percibirse. Los esfuerzos de inversión ya realizados y los proyectos en preparación permiten proyectar un crecimiento sostenido de la capacidad generadora de ingresos del país durante la próxima década.

El ahorro nacional, esto es, el aporte de los chilenos al financiamiento de la inversión, subió desde sólo 3,0% del PGB en 1984 a 16,2% en 1988 y se proyecta en alrededor de 16,5% en 1989 (cifras a precios corrientes). El esfuerzo de ahorro tiene como inevitable contrapartida la mantención de austeros patrones de consumo. Pese a ello, el consumo creció a un significativo ritmo de 3,8% al año en términos reales, superando las proyecciones originales. La austeridad en los gastos se manifestó especialmente en el sector público, el cual redujo su déficit desde 4,4% del PGB en 1984 a sólo 0,5% en 1988, sin considerar en esta última cifra los importantes ahorros provenientes de los excedentes del cobre que están depositados en el llamado Fondo de Estabilización del Cobre (aproximadamente US$ 800 millones al 31 de marzo pasado). La evolución de las cuentas fiscales es especialmente notable si se considera que fue acompañada, por una parte, de intensos esfuerzos de gasto social dirigido a los más pobres y de inversión pública y, por otra, de sustanciales rebajas tributarias destinadas a dinamizar las exportaciones, la inversión y el ahorro.

Progreso Económico y Social

El aumento de las exportaciones, la inversión y el ahorro tienen, como fin último, crear las condiciones para un crecimiento sostenido del empleo y los ingresos reales, en un marco de inflación moderada y declinante y de una gradual reducción del endeudamiento externo de la economía nacional.

El PGB - la medición más aproximada del total de la producción del país- creció a un ritmo promedio de 5,3% al año, superior al rango de 4-5% originalmente previsto. Para 1989 se proyecta un crecimiento de 5-6%. El crecimiento del PGB ha sido el motor de la creación de empleo, del aumento del poder adquisitivo de los salarios y de la paulatina superación de la aguda situación de endeudamiento que en 1984 afectaba las familias y las empresas.

La desocupación pasó de representar el 13,9% de la fuerza de trabajo en el último trimestre de 1984 a nivel nacional a 6,3% en igual período de 1988 (cifras INE). La última estadística disponible, correspondiente al trimestre móvil terminado en febrero de 1989, registró una nueva reducción a 5,9%. La contundente reducción del desempleo fue el resultado de un rápido crecimiento de 5,0% al año en la ocupación total (cifras Universidad de Chile), producto, a su vez, de la creación de un millón de empleos productivos (esto es, sin considerar aquellos asociados al PEM y al POJH) a lo largo de los cuatro años analizados. La generación de empleo es generalmente considerada la condición necesaria para la superación de la pobreza.

Los salarios reales mostraron también una tendencia creciente, proveniente de la mayor productividad de la mano de obra y de la reducción del desempleo. Entre el último trimestre de 1984 e igual período de 1988 el poder adquisitivo de las remuneraciones medias subió en 10,4%. Durante 1988, el aumento del poder adquisitivo de las remuneraciones fue también facilitado por la rebaja del IVA desde 20% a 16% que aminoró el alza del costo de vida. El aumento de las remuneraciones ha

debido ser moderado a fin de no precipitar un incremento insostenible en el consumo y no perjudicar la creación de empleos. Especialmente válido ha sido esto último en el caso del salario mínimo, el cual de hecho descendió en 9% en términos reales entre 1984 y 1988, a fin de permitirle salir de la cesantía a los trabajadores de menor calificación. Para 1989, se prevé un aumento continuo, aunque moderado, del poder adquisitivo de los salarios medios y mínimos.

La inflación, el alza del costo de vida medido por el Indice de Precios al Consumidor (IPC), pasó desde 23% a lo largo de 1984 a 12,7% en 1988. Su descenso fue discontinuo, con algún alza en 1985 y 1987. Para 1989 se prevé una tasa en torno a 15%. El haber logrado los avances antes señalados en materia de crecimiento del PGB, el empleo y los salarios en un marco de inflación decreciente es importante, porque ésta golpea principalmente a los más pobres y, una vez que se acelera, sólo puede ser controlada con un alto costo social.

La deuda externa se ha reducido desde US$ 18.877 millones a fines de 1984 a US$ 17.649 millones a igual fecha de 1988. La reducción es más notable si se compara con el crecimiento de las exportaciones las cuales reflejan la real capacidad de pago de la deuda. En efecto, las obligaciones con el exterior eran en 1984 equivalentes a 4,0 veces las exportaciones anuales de bienes y servicios. En 1988 habían bajado a 2,1 veces. La disminución del endeudamiento externo aminora la vulnerabilidad de la economía nacional frente a un eventual vuelco desfavorable de los precios de sus exportaciones o de las tasas internacionales de interés. En el período analizado esa baja se logró mediante la generación de un importante superávit comercial (que pasó desde US$ 302 millones en 1984 a US$ 2.218 millones en 1988) y de la aplicación de apropiados mecanismos de rescate y conversión de deuda externa a través de su mercado secundario, los cuales le han permitido al país beneficiarse del descuento con que ésta se transa en dicho mercado. Mediante dichos mecanismos la deuda reestructurada externa con bancos (la única susceptible de rescatarse con descuento) descendió en aproximadamente 45% en el período y asciende actualmente a alrededor de US$ 8.000 millones.

Los antecedentes expuestos muestran que los indicadores macroeconómicos evolucionaron favorablemente bajo el Programa de Ajuste Estructural aplicado en 1985-88. El progreso se vio, sin duda, favorecido por una significativa recuperación de los términos de intercambio (su índice -base 100 en 1977- pasó desde 87,4 en 1984 a 106,7 en 1988; en 1970 ascendía a 219) y la reducción de la tasa de interés (la tasa LIBO pasó desde 10,5% en 1984 a 7,6% en 1988). Lo importante es que dicho vuelco favorable vino a sumarse a los esfuerzos reales de exportación, inversión y ahorro efectuados por el país y permitió que éstos se conciliaran con una apreciable mejoría en el bienestar de la población. Adicionalmente, la evolución de la coyuntura internacional permitió reforzar la posición de reservas internacionales y acentuar la rebaja de la deuda externa, aspectos ambos que dejan a la economía nacional mejor preparada para enfrentar futuras eventualidades desfavorables. Cabe consignar a este respecto que, aun cuando el vuelco de la situación internacional también se hizo sentir en otros países latinoamericanos, el PGB per cápita de la Región creció sólo en 1,8% en el período, en tanto que en Chile aumentó el 13,1%.

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2. CYPRUS

I. B. Measures of economic policy with an impact on international trade, particularly measures aimed at the solution of balance-of-payments problems and those relating to the indebtedness of developing countries (e.g. with regard to exchange rates) as well as subsidies and other incentives in agriculture, manufacture and services:

Balance-of-payments problems

In view of the small size of the Cyprus economy, its great dependence on foreign markets and the serious competition the Cypriot exports are facing in those markets, the Cyprus Government introduced a number of generous tax incentives aiming at promoting the exports of both goods and services. The most important of these incentives are the following:

(a) Income tax incentive to promote exports of goods: According to this incentive, 6% of the foreign exchange imported to the Republic until the end of 1989, derived from the export of locally produced or manufactured goods, is deducted from the chargeable tax-income.

(b) Export guarantee schemes: Under certain circumstances the Government guarantees earnings from exports.

(c) Import duty relief for raw materials: Raw materials components and other goods used in manufacturing are usually admitted duty free, with the exception of materials which are also produced locally. In addition a drawback of import duty on certain raw materials and components used in manufacturing on which outright exception cannot be granted is allowed on the exportation of the goods incorporating the imported material.

(d) Duty free importation of capital goods: Under the existing Customs Tariff practically all plant and machinery can be imported into Cyprus free of any customs duties. In addition, no sales taxes are imposed on any form of capital equipment or buildings.

(e) Tax incentives to promote exports of services: An amount equal to 60% of the profits imported into the Republic derived from the rendering of professional services abroad and the total amount of the foreign exchange imported into the Republic derived from the rendering of employment services to private firms abroad is tax exempt. Tax exempt is also 90% of the profits or dividends imported into the Republic of any business carried on outside the Republic by a resident Cypriot or by a company which is controlled by Cypriots having an interest of not less than 15% in the business from which such profits or dividends emanate.

(f) Institutional backing for the promotion of exports of goods and services:

(i) The Ministry of Industry and Trade assists Cypriot exporters through marketing campaigns abroad, investigations of potential markets etc.

(ii) The setting up of an Export Promotion Council which is anticipated to further improve the institutional framework and co-ordinate the export drive.

(iii) The establishment of a Free Industrial Zone at Larnaca which is entirely for exporting enterprises. For enterprises located in the Free Zone the following additional tax advantages are granted:

(a) Reduced income tax rates on the emoluments of foreign employees.

(b) Dividends derived by foreign investors from companies established in the Free Industrial Zone for a period of 10 years starting from 1 January 1983 are taxed either at the rates applicable to the recipient of such dividends or at the rate at which the company paid tax on the profits out of which the dividends had been paid, whichever is the lower.

(iv) The setting up of a specialized department in the Ministry of Industry and Trade aiming at promoting export of services.

(g) Special incentives are granted for tourist development:

(i) Investment allowances with respect to tourist buildings or works ranging between 15%-25%.

(ii) Immediate depreciation.

(iii) Duty free importation of a wide variety of consumer durables for the use by the hotel industry.

(h) Special incentives to encourage merchant shipping: No income tax is payable upon the profits derived by the owner of a Cyprus ship from the use thereof in any navigating operation in international waters.

(i) Special tax incentives for offshore companies and their employees: The main tax incentives which are offered exclusively to offshore companies and their employees are the following:

(1) Reduced income tax rates for offshore companies. Offshore companies enjoy preferential income tax treatment as follows:

(a) The profits of partnerships and companies belonging to aliens, which do not have their management and control in the Republic but simply register a "branch" in Cyprus, are exempt from income tax if they derive their income from sources abroad.

(b) Companies belonging to aliens which are incorporated in the Republic, or having registered a branch here pay income tax at a reduced rate which is 10% of the standard company rate of 42.5% i.e. they pay income tax at the rate of 4.25%.

READEX FICHE

(2) Reduced income tax rates for employees of offshore companies: The foreign employees of the offshore companies who are employed in Cyprus are liable to Cyprus income tax at a rate equal to one half of the normal Cyprus tax rates. The foreign employees of offshore companies, who are employed outside Cyprus and the salaries are received out of foreign funds remitted through Cyprus are liable to Cyprus income tax at a rate equal to one tenth of the normal rates.

(3) Import and excise duty exemptions for offshore companies and their expatriate personnel: Motor vehicles, office equipment and household effects, other than furniture imported by offshore companies or their foreign employees are free of import and excise duty.

(4) Exemption from social insurance contributions for the employees of offshore companies: Foreign employees of offshore companies are exempted from the payment of Social Insurance contributions.

(5) Institutional backing: For further promotion of Cyprus as an offshore centre and for the simplification of the various procedures a specialized department has been set up at the Central Bank of Cyprus.

There is currently a review of the whole tax system aiming among others in selectively enriching the whole range of tax incentives (mainly those concerning exports of goods and services).

Exchange rate

Government policy as regards the exchange rate is to keep the Cyprus pound stable against a basket of currencies of our main trading partners.

Subsidies

In Cyprus there are two forms of subsidies, direct subsidies for grain and vine products and indirect subsidies, the major one being the one related to the price of water which directly influences agriculture and tourism industry.

Nowadays subsidies constitute a major part of total Government expenditure outlay and are granted to all classes of people (e.g. full-time and part-time farmers etc.). It is the Government's intention to gradually reduce subsidies and direct them to those who really need them on social grounds. The Government aims also at changing the method by which subsidies are granted so as to discourage further increase in production and to encourage qualitative improvements.

II. A. Policies in support of ailing sectors and the magnitude and types of assistance provided

The ailing sectors in Cyprus are the mining, the agricultural and the housing-construction sector.

Mining sector: In order to encourage the prospecting for and the exploration of the mining reserves of the country capital allowances are granted in respect of all capital expenditure including expenditure on searching for or on discovering and testing mineral deposits or winning access thereto or on development and on general administration and management prior to the commencement of production as well as expenditure on the acquisition of the site of the source or of rights in or over the deposits. As a more attractive incentive for prospecting, discovering and testing mineral deposits it is further provided that in cases of abortive expenditure on exploration for minerals an amount equal to 130% of the expenditure so incurred is deducted from the chargeable income.

Agricultural sector: It is well known that during the development process the role of the agricultural sector is declining. Nevertheless the Government attaches special emphasis on this sector aiming in particular to tackle the problem of urbanization. In order to achieve this the Government has recoursed to the following:

(i) Undertaking of large projects directly benefiting the agricultural sector such as water development projects, rural development projects, projects for improving the road network;

(ii) Extending subsidies to the agriculture sector which have already been mentioned above.

Construction in housing: After the boom of the late 1970s, due to the rehabilitation of refugees and needy persons, construction in housing has shown signs of saturation. Since most of the refugees' needs have been met the Government does not intend to take any more measures.

B. Assistance aimed at restoring the international competitiveness of the individual sectors, in particular through support for technological innovation

The sectors which will be facing increased competition in both foreign and domestic markets is the industrial sector and to a lesser extent the agricultural sector.

As regards the manufacturing sector the Cyprus Government has recently reviewed the strategy implemented so far and has come to the conclusion that radical changes are required. In particular it has become obvious that with mass production Cyprus' prospects are limited within the context of flexible specialization, (just in time production, emphasis on design, quality, flexibility to changes in consumer preference, introduction of so-called flexible computerized machinery) prospects are more promising. Therefore the Government will take all the required measures to promote flexible specialization in Cyprus which include also the strengthening of the

institutional framework (setting up technological centres and technology council), restructuring of the financial incentive system, changes in the financial mechanism etc. All the above measures are aimed at the technological upgrading and restructuring of the Cyprus economy and hence the enhancement of its competitive position.

D. Adjustment assistance policies, particularly with regard to promoting the movement of labour out of declining industries and incentives for capital mobility and for the reconditioning of installed capacity

Measures taken to assist the movement of labour out of declining industries include the following:

(a) The Redundancy Fund, which is financed by employers' contributions, and which pays workers who are made redundant a compensation of a rate determined by the workers normal salary and years of service. In addition, special compensation arrangements may be negotiated, with the assistance of the Ministry of Labour and Social Insurance;

(b) Assistance to find suitable employment in other industries is extended by the Employment Services of the Ministry of Labour and Social Insurance;

(c) Opportunities are provided for retraining in a different occupation so as to increase employability.

Further to the above, it should be noted that, as Cyprus has enjoyed fairly high growth rates, demand for labour has generally been high and therefore, no serious problems have been encountered in the absorption of labour from declining to growing industries.

To assist capital mobility the Government is in the process of establishing a stock-exchange which will play a significant role in promoting an active capital market. This undoubtedly will improve the financial structure of enterprises and their ability to self-finance investment programmes.

E. Assessment of the outcome of such policies

Cyprus has so far been relatively successful as it has been growing without any severe internal or external imbalances, even with no significant structural changes. However the scope for growing further along the same path is limited. Therefore the successful implementation of the above restructuring policies are now absolutely necessary, specially with the recent Agreement for a Customs Union between Cyprus and the EEC and the technological progress worldwide, if Cyprus is not to stay behind and become peripheric. Judging from the adaptability of the Cyprus economy shown so far one can be relatively optimistic about the future prospects.

Magnitude and type of assistance provided to industrial activities considered to have a high long-run growth potential

A. Technical assistance

Technical consultancy: Consultancy services provided to industry by Government include inter alia, identification of products and preparation of feasibility studies. Besides this detailed guidance is provided with regard to proper selection of machinery, their sources of supply, the erection, placing and commissioning of machinery, the choice and sources of raw materials etc. Problem oriented consultancy service for solving specific problems faced by industrialists is also made available to them.

Testing facilities: In order to ensure that the products manufactured or the raw materials used in their manufacture conform to the prescribed quality and standards, a number of facilities are being provided through Government laboratories or testing centres attached to various Government services.

B. Economic information and services

Industry surveys: These surveys are necessary for entrepreneurs as well as for Governmental agencies in drawing up programmes for particular industries. Such survey reports give an analysis of the trends in growth of the industry, problems being faced and suggest suitable steps for their speedy solution.

Feasibility studies: These studies indicate the feasibility of starting the manufacture of items or expand production of particular items. Such studies analyse availability of raw materials, skills, capital markets etc. with a view to determining the suitable scale of operation and size of unit having regard to the markets and resources position. These studies also help to work out the economics of production and expected profitability of the venture.

Market surveys: These surveys have a limited or wider scope i.e. they are conducted for a single industrial sector or for a wider clientele consisting of entrepreneurs, industry associations or Government agencies.

Economic information: Information furnished relates to the position of existing industries, availability of markets, skills, prospective industries etc. In short the prospective industrialist is helped to select an appropriate line of manufacture and all information for this purpose is made available to him.

Marketing assistance

Export promotion facilities: The Government provides a number of facilities to industrialists for exporting their products. These services include: the participation in trade fairs and exhibitions, the organization of trade delegations from and into Cyprus, the carrying out of export market research, the undertaking of advertising campaigns, the granting of financial assistance to exporters to participate in overseas trade fairs and exhibitions etc.

Trade centres

Also in order to render integrated marketing assistance and promote exports from Cyprus a number of trade centres have been established by the Government. These centres provide a focal point of contact for the buyers and sellers with supplementary services necessary for trade contacts and commercial transactions.

Other incentives

These include the duty free importation of raw materials, the operation of a draw-back system on exports, an income tax allowance on exported items, the provision of exports insurance, the granting of Government guarantees for the execution of export orders etc.

D. Management development services

Management consultancy: The provision of management consultancy in various disciplines forms an integral part of extension services of the Government aimed at improving the competitive strength of enterprises. Consultancy services mainly assume two forms, namely, the problem oriented consultancy service for solving specific problems faced by industrialists through detailed in-plant studies which cover finance, production, management and other related problems; and, secondly general appreciation courses in industrial management and specialized management courses in areas like marketing, financial management, costing, production etc.

Training for unemployed graduates: A special scheme has been initiated for training unemployed graduates and diploma holders to be engaged in managerial duties.

Scheme for self-employment of educated unemployed: The objective of this scheme is to encourage the educated unemployed to undertake self-employment ventures in industry, service and business through the provision of financial assistance.

E. Industrial training

The main objective of industrial training programmes is to upgrade the skills of workers and managerial capabilities of the supervisory staff in the manufacturing sector. Training programmes are being organized by several agencies as follows:

(1) The Cyprus Productivity Centre which offers upgrading and ab initio training courses to managerial and supervisory personnel in all areas of management. It also offers a post-graduate management diploma programme for university graduates. Also the vocational training component provides upgrading and ab initio training in 12 different trades for industry based technical staff.

(2) The Higher Technical Institute which runs training courses for high level technicians in basic engineering specializations and in computer studies as well.

(3) The Technical Schools which other than offering full-time courses in basic technical education, also operate the apprenticeship training scheme through which young apprentices attend during working hours theoretical instruction at the technical schools.

(4) The Industrial Training Authority is the body responsible for formulating training policies and establishing training programmes and schemes. The Authority is currently involved in ab initio training, upgrading and retraining in the form of on-the-job training, as well as training at institutions and centres.

F. Financial assistance

Credit guarantee scheme: The scheme is aimed to provide guarantees to commercial banks in respect of loans to borrowers engaged in industrial activities. The extent of the guarantee ranges between 70%-100% of the unsecured part of the loan granted to eligible applicants on the basis of the results of a well documented feasibility study.

Cyprus Development Bank: The Bank provides finance to entrepreneurs who are technically or professionally qualified or possess relevant experience or skill in industry and do not have adequate resources of their own for setting up in business. The assistance is provided by way of long-term loan or equity towards meeting the gap/expected level of promoter's contribution and the actual amount that the contributor could bring on his own subject to a ceiling of 25%-45% of the project depending on its nature.

G. Fiscal incentives

Ten-year tax holiday: This applies to profits and dividends derived from the manufacturing of new products.

Investment incentives

(1) An immediate depreciation allowance equal to the value of capital expenditure incurred by a manufacturing unit on the acquisition of fixed assets is allowed as a deduction from income in the year in which it is incurred.

(2) An investment allowance is granted on any new or imported used asset, with the exception of buildings erected for self-housing purposes, in the year the investment takes place. The investment allowance is granted in addition to the immediate depreciation or wear and tear allowance.

Industrial Free Zone: This site is provided with all the necessary infrastructural facilities appropriate for an industrial estate. Industries established in the IFZ operate under minimum custom formalities and can import all their requirements without the payment of any customs duty. Also enterprises located in the IFZ enjoy certain additional tax advantages over industries established outside.

Bonded factories: The Government may grant permission for the operation of bonded factories in any area other than the IFZ. The customs status extended to bonded factories is generally the same to that extended to companies operating from within the IFZ.

Industrial estates: These offer an easy way to industrialists who want to acquire an industrial plot with all the required infrastructural facilities. Plots in industrial estates are leased on a 33-year basis renewable up to 99 years at very low rentals. The lease can subsequently be used as security for obtaining finance for building the factory or for other business purposes.

(Original: ESPAÑOL)

3. ECUADOR

En su respuesta el Gobierno del Ecuador manifiesta

que las perspectivas de crecimiento, empleo, producción y desarrollo económico en general, dentro del contexto global del ajuste estructural, son inciertos para todos los países en desarrollo, por la presencia del proteccionismo que se ha hecho presente con mayor intensidad y nuevas formas en estos últimos tiempos. Las trabas al desarrollo causadas por la lentitud del crecimiento, la caída de los precios de los productos básicos, el estancamiento de las transferencias financieras y la acumulación de la deuda, constituyen los principales y graves problemas a los que tienen que hacer frente las economías de los países en desarrollo para superar la grave crisis en que se desenvuelven y alcanzar las metas del crecimiento y desarrollo económico.

Los precios de los productos básicos no petroleros han disminuído considerablemente en el mercado internacional mientras que los precios de manufacturas y demás bienes exportados por países desarrollados han crecido en progresión geométrica. En general, el comercio exterior de los países en desarrollo no solo que se ha detenido sino que ha experimentado un proceso de regresión, equiparable en valor al alcanzado hace dos décadas.

La escasez de recursos financieros para el desarrollo es la característica más sobresaliente de la situación que enfrentan los países en desarrollo. La insuficiencia de ingresos por la vía de las exportaciones es el resultado del lento crecimiento y diversificación de los mercados en los países de economías desarrolladas. Los pagos efectivos por concepto de intereses sobre la deuda externa han crecido considerablemente. Ante la gravedad de los problemas económicos que enfrentan, varios países en desarrollo han suspendido el pago de sus obligaciones con el exterior, situación que les ha traído como consecuencia la limitación de la concesión de recursos frescos provenientes de organismos internacionales de financiamiento.

Ante esta situación, Ecuador al igual que todos los países en desarrollo, ha solicitado en todos los foros internacionales y demás organismos que tienen conocimiento y competencia sobre comercio y desarrollo, la liberalización del comercio exterior, situación que lleva implícito el levantamiento de todas las medidas no arancelarias y proteccionistas que frenan e impiden un normal desarrollo de las relaciones comerciales; igualmente ha solicitado a la comunidad internacional el reconocimiento de precios justos y remunerativos para los productos básicos y materias primas que constituyen sus principales productos de exportación que en los actuales momentos soportan un constante deterioro de los términos de intercambio y de una desleal competencia fruto de preferencias que otorgan países desarrollados a la producción proveniente de los territorios de ultramar.

Las condiciones solicitadas para mejorar el entorno económico y favorecer el ajuste estructural en las economías de los países en desarrollo, permitirán un flujo constante y progresivo de recursos que favorezcan la solución de los problemas internos que enfrentan las economías de esta región. Igualmente y como medida de soporte para alcanzar las metas del crecimiento y desarrollo económico, a través de los países miembros del GATT, en la Ronda de Negociaciones Uruguay, ha solicitado la liberalización del comercio del banano que para muchos países en desarrollo constituye el principal rubro generador de divisas y ha expresado su desacuerdo ante el pronunciamiento de la CEE de excluir a este producto de todo tipo de negociación dentro de los productos tropicales, en razón de que a partir de 1992, con la constitución del mercado único comunitario, tiene que cumplir el compromiso formal con los países suscriptores del Acuerdo de Lomé, para favorecer el comercio del banano proveniente de estos países.

(Original: ESPAÑOL)

4. EL SALVADOR

Con relación a la Resolución 159 (VI) de la Conferencia y en particular al párrafo 105 del Acta Final de la Séptima Conferencia, el Gobierno de El Salvador reitera su respaldo al acuerdo alcanzado sobre la urgencia de que los gobiernos de los Estados Miembros de la UNCTAD aplíquen plenamente los compromisos de detener e invertir el proteccionismo y los compromisos en materia de ajuste estructural.

El Gobierno de El Salvador ha elaborado la presente nota en la cual se ofrece un marco general del Programa Económico de corto plazo e inscribe en él los principales elementos de las medidas orientadas a facilitar la liberalización del comercio y en consecuencia a establecer las bases para una inserción adecuada de la economía salvadoreña en el contexto mundial.

El Programa Económico de Corto Plazo del Gobierno de El Salvador tiene las siguientes principales metas: reducción de la inflación, restauración del crecimiento económico, creación de empleos y fortalecimiento del sector externo. La inflación será reducida del 20% al 18% para finales de 1989 y al 15% para finales de 1990 (promedios anuales). El producto Interno Bruto crecerá en 0.9% en 1989 y se proyecta para 1990 un crecimiento del orden de 3%. Esta recuperación de las actividades económicas conducirá a una declinación gradual en el desempleo abierto desde el actual 10% hasta el 9.5% en 1989 y hasta el 8.1% en 1990. En adición a la eliminación de todos los existentes obstáculos a los pagos externos para fi-

nales de 1989, el Gobierno planea para finales de 1989 mantener el mismo nivel de reservas internacionales netos de diciembre de 1988, y aumentarlos en US $ 15 millones en 1990. Para alcanzar esta última meta, el déficit comercial disminuirá de US $ 534 millones en 1989 a US$ 485 en 1990.

En el marco de estas metas se ha implementado un conjunto de medidas de política macroeconómica en el campo monetario, crediticio, cambiario y fiscal. En esta misma dirección, el Gobierno ha iniciado algunas reformas necesarias para restaurar la credibilidad de las instituciones gubernamentales y ofrecer a los agentes económicos reglas de conducta claras y no discrecionarias.

Entre estas medidas, se inscriben específicamente aquéllas orientadas a detener e invertir el proteccionismo y las relaciones con el ajuste estructural.

La tasa de cambios juega un papel clave en el proceso de asignación de recursos. El objetivo inmediato del Gobierno es establecer los elementos de un mercado libre en la determinación de la tasa de cambio. Se ha logrado establecer un doble mercado cambiario = un mercado oficial en el que continúa la tasa de cambio de 5 colones por dólar US y un mercado bancario en el cual la tasa está determinada por el libre juego de las fuerzas del mercado.

En el mercado oficial se realizan por el lado del débito, transacciones relacionadas con el servicio de la deuda pública, los productos del petróleo y productos esenciales tales como

granos básicos, leche, medicinas e insumos agrícolas de la cosecha del presente año; por el lado del crédito, incluye los ingresos por exportación de la presente cosecha de café y transacciones oficiales de capital.

En el mercado bancario se realizan el resto de las transacciones (estimadas en 70% del total de transacciones); la tasa bancaria de cambios ha sido muy estable, moviéndose entre 6.30 y 6.50 colones por dólar US.

En apoyo al ajuste de la tasa real de cambio y para acelerar el proceso de liberalización del comercio exterior, se puso en marcha en octubre de 1988, una primera fase de la reforma arancelaria que consiste en la reducción del techo arancelario del NAUCA II -Nomenclatura Arancelaria Uniforme Centroamericana- Partes A y B, a un máximo del 50% y un incremento en el piso al 5%. Adicionalmente antes de finales de 1989, se prevée que las barreras no arancelarias al comercio serán eliminadas. La meta final es alcanzar un nivel arancelario uniforme de cerca del 20% en 1994. Los impuestos a la exportación serán reducidos gradualmente con el objetivo de eliminarlos para 1994. Esfuerzos importantes serán hechos para simplificar los trámites administrativos relacionados con el comercio exterior.

Paralelamente a estas medidas, el Gobierno trabaja estrechamente con sus socios del Mercado Común Centroamericano para encontrar medidas para fortalecer el mercado común y su mecanismo regional de compensación de pagos.

Adicionalmente el Gobierno busca avanzar en sus negociaciones relacionadas con la adhesión de El Salvador al Acuerdo General sobre Aranceles Aduaneros y Comercio (GATT).

(Original: FRANCAIS)

5. GABON

Le Gouvernement du Gabon a informé le secrétariat que sa politique en matière de protectionisme et d'ajustement structurel n'a connu aucune modification par rapport à l'orientation donnée et que les dispositions antérieures ont été renforcées dans les textes des lois et décrets énumérés ci-après, adoptés au cours de l'année 1989:

- Loi No. 5/89 du 6 juillet 1989 relative à la concurrence

- Loi No. 7/89 du 6 juillet 1989 portant code des investissements dans la Republique gabonaise.

- Décret No. 540/PR/MCTTR du 24 mai 1989 portant suppression des interdictions et des restrictions quantitatives à l'importation

- Décret No. 541/PR/MPDE du 24 mai 1989 portant libéralisation des marges commerciales des marchandises importées et des prix des marchandises de fabrication locale.

Ces textes, dont le Gouvernement du Gabon a fait parvenir une copie au secrétariat, sont à la disposition des délégations qui voudraient les consulter.

(Original: ENGLISH)

6. NORWAY[1]

I. International Trade

A. There were no major changes in Norway's trade régime, laws, regulations or procedures last year.

B. Norway cannot be said to have had a balance-of-payments problem in 1989. Measures specifically aimed at solving such problems have thus not been implemented.

Support for the Norwegian agricultural sector is mainly given as subsidies. Total transfers for 1988-89 were NOK 10.9 billion (bn). For 1989-90, transfers will be at a level of NOK 11.25 bn. Transfers have been somewhat reduced in real terms over the last ten years.

Total transfers to Norwegian fisheries amounted to NOK 729 million in 1988, compared to NOK 855 million in 1987 and NOK 1.288 million in 1986. Transfers in 1989 will be in the range of NOK 972 million. The gradual reduction in support extended was interrupted in 1989, due to the hardship imposed by the decline in the stock of many of the most important species.

Support for the manufacturing sector is mainly given as loans for investment purposes from state financial institutions, which generally accept a higher degree of risk than do private financial institutions.

In 1989, the volume of credit extended by the Norwegian Industrial Fund and the Industry Bank was limited to NOK 1.8 bn, up from NOK 1.7 bn in 1988. The funds are allocated on the basis of an individual consideration of each of the applications for support which are received. In addition, the Regional Development Fund provided more than NOK 1 bn as credits and almost the same amount in grants in 1989, mainly for investment purposes. Furthermore, NOK 300 million were available as guarantees, while another NOK 590 million were available as grants for regional development purposes from other sources than the Regional Development Fund.

Public expenditure under the facility established in support of the shipbuilding sector amounted to NOK 1 bn, somewhat lower than in 1988. The support was mainly extended as interest rate subsidies, and is gradually being phased out.

As in 1988, NOK 80 million was available as grants for industrial adjustment and restructuring purposes.

[1] Details on the Norwegian economy are contained in the National Budget 1990, published by the Royal Norwegian Ministry of Finance, and the Economic Survey 1988 published by the Central Bureau of Statistics, Oslo. A copy of these publications is available in the secretariat for consultation by interested delegations.

Subsidies to state owned industrial enterprises amounted to NOK 0.9 bn in 1989, down from NOK 1 bn the year before. Mining and steel companies located in remote areas of the country were major recipients, reflecting the importance of regional considerations in decisions regarding the distribution of support for publicly owned enterprises.

C. The latest extension of the Norwegian GSP scheme took place in the summer of 1989, and formed part of a package tabled by Norway in the mid-term review of the GATT Uruguay Round of trade negotiations. The products added to the scheme were:

HEADING NO. (HS)	DESCRIPTION OF GOODS
ex 10.06	Rice, other than rice in the husk and husked rice
15.08	Ground-nut oil and its fractions, whether or not refined, but not chemically modified
ex 15.11	Solid fractions of palm oil
15.13	Coconut (copra), palm kernel or babassu oil and their fractions, whether or not refined, but not chemically modified
ex 15.15	Linseed oil, crude; castor oil, tung oil, oiticia oil, croton oil and tobacco seed oil, as well as their fractions, but not chemically modified. Other vegetable crude oil and other solid fractions of items nos. 15.15.9020 and 15.15.9030 in the Norwegian Customs Tariff
ex 15.16	Vegetable fats and oils and their fractions, hydrogenated, inter-esterified, re-esterified or elaidinised, whether or not refined, but not further prepared, other than hydrogenated castor oil
ex 15.19	Oleic acid, acid oils from refining and industrial fatty alcohols
ex 24.02	Cigars, cheroots, cigarillos and cigarettes of tobacco

A full notification of the extension has already been furnished to the UNCTAD Secretariat2/ The Norwegian GSP scheme continues to extend full duty free treatment to all products admitted under the scheme, without tariff quotas or ceilings. All products originating in least developed countries may be imported duty free under the scheme.

2/ See TD/B/GSP/NORWAY/21

D.
1. No quantitative restrictions apply to non-MFA industrial products.

Under MFA IV, liberalising measures have been undertaken with regard to all bilateral textile agreements entered into under the auspices of the Arrangement Regarding International Trade in Textiles (MFA). Norway maintains bilateral MFA-agreements, i.a., with 14 developing countries. The agreements have been notified to the GATT.

Quantitative restrictions on imports of agricultural produce apply globally, and are essentially limited to products produced in Norway. In spite of both subsidies and import restrictions, more than 50 per cent of total food calories consumed are imported.

2. No anti-dumping or countervailing duty cases have been initiated in 1989.

3. With the exception of certain MFA-products, no safeguard measures are maintained.

4. Norway maintains a system of automatic licensing of imports with regard to a number of textile items, for surveillance purposes.

E. Norway continues to be a member of the European Free Trade Association (EFTA), and maintains trade agreements with the European Communities. No new trade arrangements or agreements with other countries were entered into in 1989.

F. With regard to future trade policies, the focus is mainly on the on-going Uruguay Round (UR) of trade negotiations. Norway is ready to contribute substantially to trade liberalisation in the context of the UR in order to achieve a more open world trading system.

The EFTA countries and the Commission of the European Communities have recently concluded a study of the possibilities for closer co-operation between the EC and the EFTA countries. On the basis of the findings of this study, the parties will enter into negotiations with the aim of expanding co-operation between the EFTA-countries and the EC.

II. Structural adjustment

A. The only sector-specific measure now in force is the governmental support scheme for the Norwegian shipbuilding industry.

Type of assistance	Magnitude of assistance, NOK mill.		
	1987	1988	1989
Interest rate subsidy;			
- long term financing :	611	679	763
- construction loans :	86	75	97
Guarantee arrangements :	87	154	99
Custom refunds :	164	135	50
TOTAL :	948	1.043	1.009

The subsidy schemes available are administered in accordance with the Understanding agreed upon in the OECD.

The support for the Norwegian shipbuilding industry is being phased out step by step. The provision for custom refunds has already been phased out.

B. In 1989, NOK 80 million was available as grants for adjustment and restructuring purposes, the same amount as in 1988. These funds were not tied to specific sectors.

C. Norwegian research and development (R & D) policy within the technical-industrial sphere gives priority to six sectors considered to have a high long-run growth potential: Aquaculture, Biotechnology, Environmental Technology, Information Technology, New Materials and Offshore (Oil and Gas) Technology.

Most of the funds allocated to such research are made available through the Norwegian Council for Scientific Research (NTNF), which had a budget of NOK 846 million in 1989, up from NOK 805 million in 1988. The budget for 1990 is NOK 876 million. R & D funds are also used for educational activities and for activities aimed at promoting the diffusion of new technologies. The share of public R & D resources channelled to companies, as opposed to research institutions, is growing.

In addition, NOK 99 million was available for government-assigned R&D contracts in 1989, up from NOK 41 million in 1988.

D. In order to reduce the country's dependence on the oil sector, it is regarded as necessary to improve the international competitiveness of non-oil industries. Emphasis is put on general measures for improving business conditions rather than sector-specific measures.

In 1989, Norway spent approximately NOK 3.5 bn on labour market measures, of which more than 60 per cent were allocated to educational and re-educational activities directly contributing to readjustment. The corresponding figures for 1990 will be NOK 5.25 bn, of which 70 per cent are earmarked for educational activities. The measures employed apply generally and not specifically to declining sectors.

Financing of reconditioning of installed capacity may be sought from the general schemes for structural adjustment administered by the state financial institutions.

The various State financial institutions contribute to easing the industry's access to capital. In order to further improve the availability of risk capital, a venture company, where the State holds 49 per cent of a total equity of up to NOK 600 million, was established in 1989.

E. Assessments giving clear indicators of the degree of success of the various structural adjustment initiatives are hard to find. On a more general level, the limited success of the sector-specific measures previously in place has caused a reorientation of policies, away from sector-specific measures and over to more generally applicable measures.

(Original : ENGLISH)

7. SWEDEN

In addition to the information already provided to the secretariat and reproduced in TD/B/1245, the Swedish authorities reported a further change to its tariff schedule as follows:

Tariff Heading No.	Description of Goods	Tariff change
ex 94.01, 94.03	Furniture and parts thereof made of cane, osier, bamboo or similar materials	The Customs Duty has been lifted as from 1 July 1989 (as a result of the negotiations in the Uruguay Round).

(Original: ENGLISH)

8. TURKEY

UPDATED INFORMATION ON THE CHANGES IN THE TRADE REGIME OF TURKEY DURING THE PERIOD 1980-89

1. There has been a significant redirection of Turkey's economic strategy and policies since 1980. Economic stabilization and adjustment measures introduced in January 1980 initiated a transformation of Turkish economic policies from inward-looking, State-interventionism towards greater reliance on the play of market forces. Within this context, Turkey has been pursuing a policy of trade liberalization. As of 1983, in particular, it has made great strides in this direction, although without conducting negotiations on concessions with our trading partners.

2. The structural adjustment policies embrace a wide range of measures that also affect trade flows. Accordingly, the following measures are worth mentioning:

- Since 1980, Turkey has followed a flexible exchange rate policy, designed to strengthen the competitiveness of Turkish products while permitting implementation of a more liberal trade system. Accordingly, up until August 1989, the official rate (applicable to the following day's transactions) is established through a fixing session at the end of each business day. The daily fixing, in which the Central Bank and authorized dealers in foreign exchange participate, determines the rate at which the Central Bank purchases foreign exchange from commercial banks honoring transfer requirements and sells foreign exchange to the rest of the public sector. For approved transactions of less than $US 50.000, authorized foreign exchange dealers are required to purchase and sell foreign exchange at rates that differ from the official rate by no more than prescribed margins. For larger transactions, the rate is freely negotiable between authorized parties. Commercial banks can freely engage in forward transactions within predetermined limits set by the Central Bank.

- Comprehensive export promotion measures were introduced to give momentum to export. First of all, the exporting environment has been made more favorable by streamlining bureaucratic formalities, such as greatly simplifying export adminitration by reducing the number of exports subject to licensing and providing for priority access to foreign exchange. Entire exemption of industrial exports from licensing procedures, exemption from various charges on bank credits, the establishment of the Turkish Eximbank providing export credits and insurance, and creation of free-trade zones are the basic policy tools for export-oriented industrialization strategy. Horizontal and vertical diversification policies were put into effect to improve Turkish exports' market shares. Moreover, successive measures, such as elimination of the export tax rebate scheme at the end of 1988, have been taken to diminish and gradually eliminate the importance of the roles of export subsidies.

3. To achieve a more liberalized trading system, the import régime was also revised in 1988-89 and new measures and regulations have been put into effect. These may also be summarized as consisting of gradually reducing protection, either by eliminating quotas or by reducing the number of articles on the import prohibition or authorization lists, or by large cuts in customs duties. All these measures stem from the Turkish Government's desire to expose the economy to market forces and international competition, while taking into consideration the country's level of development and macro-economic needs. To gain an idea of the scale of the changes that have occurred in the régime, one needs only look in greater detail at its main components:

- In the Turkish import régime, imports of goods are divided into two categories: those subject to import licensing and those that may be freely imported into Turkey. The list of goods subject to licensing by the Undersecretariat of the Treasury and Foreign Trade has been gradually reduced from 1,300 items in 1983 to 17 items in 1989.

- For all commercial imports, advance deposits must be placed with a commercial bank. These import guarantee deposits do not earn interest and are refunded after the goods have cleared customs and the foreign payment has been made. The general rate was reduced to 5% in June 1989 from 15% in 1988, and crude oil, fuel oil, nafta, coal, wheat, sugar, fertilizers, medicine and medical raw materials. Inoculation are exempted from import guarantee deposits.

- Tariffs have been considerably reduced. In 1989 alone, the customs duties for 11,000 items were reduced. At present, the average effective tariff rate in Turkey is below 5% and, furthermore, the sum total of all the duties, taxes and surcharges levied by the Government does not exceed 7% of the total value of imports. This result is due to the fact that imports free of taxes and duties of any kind, represent a very large part of the total.

- In addition, crude oil, hard coal, lignite, mining, iron-steel products, wood, wood plup and timber, cotton, cotton yarn, industrial type sewing and textile machinery, electronic industry components and spare parts, ship, engines for ships, raw hide, chemicals, pharmaceutical raw material, medical material, breeding animals, cereal seeds, raw fat, fodder additives, agricultural machinery and precious stones are exempted from customs taxes during importation, because these constitute the main inputs of the Turkish industry.

For intermediary goods other than these, the protection rates were pulled down.

- In short, during the years under consideration the total volume of imports has increased considerably, from $US 7,900 million in 1980 to $US 14,300 in 1988. The rise in imports is largely due to the large proportion of imports of manufactured goods, which represented 76.5% of the total in 1988 as against 47.5% in 1980. Thus, imports have become one of the engines of the export performance.

4. On the other hand, to protect the domestic industry against unfair competition and/or preventing impairment of the market due to dumped and/or subsidized imports, among unfair competition cases in importation, Turkish authorities put into effect the "Law on the Prevention of Unfair Competition in Importation"[1/] on July 1, 1989, and the"Decree on the prevention of unfair competition in importation" on September 8, 1989.

1/ The Turkish authorities provided the secretariat with a document containing the text of this law in the Turkish language together with its unofficial translation into English, French and German. This document is available in the secretariat for consultation by interested delegations.

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PROTECTIONISM AND STRUCTURAL ADJUSTMENT

Information provided by States members of UNCTAD for the annual review by the Board of protectionism and structural adjustment

Note by the UNCTAD secretariat

Addendum

Since the preparation of TD/B/1245 and Add.1, the attached information has been received from the Federal Republic of Germany and Japan. The terminology used is that of the original source.

GE.90-50715/3031a

(Original : ENGLISH)

1. FEDERAL REPUBLIC OF GERMANY[1]

Structural Adjustment Policy in the Federal Republic of Germany

Economic activity in the Federal Republic of Germany has continued unabated during the course of 1989: real GNP growth in the first six months of 1989 stood at 4.6 %, this means that growth dynamics have gathered further momentum compared with the previous year's level. Although consumer prices are expected to grow by approximately 3 % in 1989, this single price rise at the turn of the year does not mean that there will be a cyclical acceleration in the movement of prices in general. Continual attentiveness of those responsible for monetary policy making and a moderate pay policy can help overcome existing risks in the price field. Seen as a whole, overall economic conditions for accomplishing structural adjustment without friction have thus improved.

It is the interplay of growth and structural change that can best help to sustain the standard of living and the network of social services, to replace lost jobs and create new employment. Only constant adjustment to continually changing market conditions by entrepreneurs, by the self-employed, and by payroll employees will guarantee a competitive lead and thus rising real income and growing employment. A prerequisite for this is an economic policy orientation focusing on competition and individual initiative, one which creates and guarantees open markets both at home and abroad. Hence, the Federal Government is of the opinion that its consistent policy to improve macroeconomic conditions while refraining from defensive economic policy strategies such as subsidies,

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[1] Further information on the promotion of technology and innovation is given in the relevant parts of the 1989 Report on Subsidies and Farming. A copy of them, in the German language, is available in the secreatariat for consultation by interested delegations.

protectionism, public employment programs, and a government-fed expansion of demand associated with higher budget deficits is best suited to ensure structural change without friction.

Structural change, however, is not progressing without friction in all sectors of the economy. The service sector and, within the manufacturing industry, electrical engineering, road construction, the plastics industry, mechanical engineering, the chemical industry and iron, sheet metal and hardware producers, have particularly been winners in the field of employment in the past five years, whereas other industries experienced capacity cuts and declining employment. One of the main features of an efficient market economy system, apart from innovation gains and corporate growth as a result of successful operations, is that individual enterprises may withdraw from competition. As a general rule, the risk of remaining without employment for a longer period of time as a consequence of structural change is limited since, in the process of change, a variety of new jobs arises. Personal hardship is alleviated through financial assistance under the unemployment insurance system and through active support received in finding a new job. Qualifications and further training also play an important role. In isolated cases, it may become necessary to grant supplemental government assistance on a temporary basis and on a declining scale to cope with structural change and to avoid abrupt developments entailing serious consequences for the work force and for the regions concerned.

Assistance granted to the steel industry, for instance, has helped facilitate the particularly difficult restructuring process by adjusting production patterns and capacities to market conditions. Since the situation in the steel market is favorable at the present time, companies are in a position systematically to continue this course. This year, German firms will repay a further portion of steel grants they received earlier.

Furthermore, the Federal Government is fulfilling its responsibilities toward the German coal districts. Agreements reached in the coal round of December 1987, the ceilings set for coking coal grants, in effect since 1989, and the decisions taken by the Federal Government in July and August 1989 concerning the use of coal in electricity generation are degressive measures to assist the longer-term process of capacity adjustment in the German coal industry.

Within the framework of its policy of improving regional economic structures, the Federal Government also conducts special programs for the iron and steel, shipyard, and shoe-manufacturing regions in order to facilitate structural change in areas where traditional industries are concentrated through the elimination of barriers to adjustment and the creation of new jobs. Financial assistance under the structural assistance act in the amount of an annual DM 2.45 bn up to and including 1998 is granted in particular to structurally weak areas which can then invest in structural improvement in economic infra-structure, in training and further education, in the promotion of research and technology, as well as in town planning. However, providing these funds should not be allowed to impede the adjustment process and dampen the initiative of those immediately involved; this assistance can only be granted as help toward self-help.

In the aerospace industry, in which the government became involved to counteract the risk of a monopolization of the world market by making a contribution on the part of the Federal Republic of Germany toward an independent European aerospace industry, the approval of the merger between Daimler-Benz and MBB has set a clear signal for the reduction of subsidies. To the extent that Airbus-related risks are shouldered by industry, the Government may eventually withdraw from its responsibilities in connection with Airbus by 1996.

The best prerequisite for coping with structural change in a dynamic way without outside help is undistorted national and international competition. The fact that the economy of the Federal Republic has achieved high performance and competitiveness is not least due to the fact that it has had to cope with keen international competition. In its medium-term policy of structural reform, the Federal Government will therefore above all aim at removing obstacles barring access to markets such as protectionism, regulation, and other impediments to competition. In this context the Federal Government will advocate maintaining and strengthening the free, multilateral system of world trade at all levels. It attaches particular importance to the current Uruguay Round within the GATT and to the completion of a single European market open to the rest of the world. In the face of the increasing integration of the world economy, close international co-operation is to be geared to embedding international competition in a binding system of rules (GATT) and to ensuring that signals of structural change are not distorted by government intervention, extreme exchange rate fluctuations, or inadequate burden-sharing resulting from the reduction of environmental disturbances affecting several countries.

Detailed Answers to Items I B and II [1]

- Information Technology

Apart from special programmes to promote research and development, there is no sector-specific aid for information technology in the Federal Republic of Germany. As a rule, the market-oriented development - right up to commercialization - of new technologies, development which follows on the phase of research, is a task of industry itself. Government support for research is therefore limited to cases

= where the technologies involved demand an expansion of the public infrastructure available (as in that of telecommunications) or are a prerequisite for the fulfillment of public sector tasks (as in that of data protection),

= where the availability of the technologies involved is in the public interest, but where the long timespan and high economic risks involved as well as the extent of the financing required would make it impossible for industry to develop them on their own (as in that of microelectronics), and

= where the technologies involved are still undergoing initial research with merely speculative ideas as to their applications, ideas which still have to take on concrete shape before industry can be expected to become fully active (as in that of neuro-network technology, photonics and molecular electronics).

On principle, the government support granted in these cases, support which must be justified after in-depth reviews and due consideration of the advantages and disadvantages involved, should take the form of cooperative projects undertaken jointly by industrial companies and research institutes so as to ensure both that

[1] Item IB of the Note Verbale from the Secretary-General refers, inter-alia, to subsidies and other incentives in agriculture, manufactures and services. Item II refers to information on the implementation of structural adjustment policies.

know-how is interchanged rapidly and comprehensively between industry and science and that industry's own research activities are strengthened. In this context, cooperation at a European level enjoys priority over that oriented solely to national interests.

The promotion of industrial research fulfills another task in the form of indirect-specific programmes which are oriented to the needs of and adjustment problems faced by small and medium-sized enterprises. The abrupt technological changes that are currently being initiated by developments in the field of microelectronics, telecommunications technology and information processing technology often overtax the capacities available in small and medium-sized enterprises for innovation. To this is added that they often face financial bottlenecks, that their employees do not always have the qualifications required, and that their size alone often places them at a disadvantage in respect of cooperation with scientific institutions. It was to compensate for these disadvantages that the Federal Government adopted its new overall concept for promotion of research and development in small and medium sized enterprises in 1989, a concept that focusses, above all, on the use of information technology (in the field of production and microsystems technology, for instance).

- <u>The Aerospace Industry</u>

The aerospace industry is not protected by any import regulations or non-tariff measures. Nor are the government funds provided intended to mitigate the processes of transition or adjustment required as a result of the emergence of competition from newly industrialized countries.

Primarily, initial investment in the creation of independent European civil wide-body aircraft manufacturing capacities is involved. Government funds are therefore

only provided for specific development projects and is subject to repayment.

In 1988, the aerospace industry received funds in the order of DM 753 million from the budget of the Federal Ministry of Economics. And for the year 1989, budget funds totalling DM 1.2 billion have been allocated to this purpose.

The Federal Government's concept to reduce the German Airbus subsidies provides for the privatisation of the German stake in Airbus. The Daimler-Benz AG (DB) is to become the majority shareholder of the Messerschmidt-Bölkow-Blohm GmbH (MBB) and the holdings of the previous majority shareholders, the Governments of the Laender Hamburg, Bremen and Bavaria, is to be reduced to 37 %. The purchasing price DB pays for the share of MBB is to be transfered to the Deutsche Airbus GmbH (DA), a subsidiary of MBB and a partner in the European Airbus programme. The injection of capital in the order of DM 1 billion will provide the DA with sufficient industrial capital to enable it, in future, to finance the series production of the Airbus itself.

In order to achieve the goal of privatisation, the Federal Government is prepared to take a stake of 20 % in the DA up to 1996, to assume responsibility for the old debts incurred in conjunction with previous programmes, and to provide surety, for a transitional period, for the foreign exchange losses incurred by the new A330/340 programmes in the event of the dollar rate of exchange falling below DM 2 or 1.80. In this respect, the share of this burden which is to be borne by the enterprise itself will be raised gradually so that industry will bear the full foreign exchange risk by the end of the 1990s.

All the aid granted by the Federal Government is repayable subject to the trend in exchange rates or to profits from Airbus sales.

- The Shipbuilding Industry

1. Objectives

In many European countries, shipbuilding is a traditionally protected sector which has been subsidized to differing degrees since the beginning of the 1960s.

The government assistance granted to this sector is not aimed either at the closing-off of this market or at an expansion of the German trade balance surplus, but rather at supporting the reduction of production capacities and structural adjustment and at protecting actually competitive and highly specialized operations against both highly subsidized competition in Europe and the aggressive price policies of a number of suppliers in South-East Asia.

At the same time, the Federal Government propagates clearer aid rules and a gradual reduction of subsidies in both the EC and the OECD.

2. Instruments

a) German shipyards receive interest rate subsidies, at terms defined by the OECD, under the "VIII. Werfthilfe-Programm" (Eighth Shipbuilding Support Programme), the seventh tranche of which has been submitted to the EC Commission for approval. As a rule, the interest rate reduction amounts to 2 percentage points insofar as foreign currency loans do not in exceptional cases demand a higher subsidization of interest rates in order to attain the OECD minimum interest rate of 8 %. The funds allocated in 1989 totalled DM 160 million.

Developing countries are entitled to claim special terms and conditions that provide for a grant element of at least 25 %. Originally, all countries on the DAC List were entitled to claim development aid under the Werfthilfeprogramm, but since 1989 a revised list of the EC Commission applies which no longer includes either middle income developing countries or newly industrialised countries.

This so-called "VIII-E Support", too, is in conformity with OECD rules.

b) In July 1987 [i.e. after the expiry of "Reederhilfen" (Shipping Aid) granted by the Federal Ministry of Transport], the "Wettbewerbshilfe-Programm" (Competition Aid Programme) was introduced for a limited period of 3 1/2 years in order to mitigate the abrupt consequences of the worldwide shipping crisis and to counter the distortion of competition caused by the higher subsidies granted by other countries.

Grants of up to 20 % of the costs of constructing new or remodelling technologically advanced vessels could be applied for up to 1989; in 1990, the limit on such grants will be 14 %. The prerequisite for the granting of this support is proof of a competitive offer with higher subsidies.

The funds originally allocated totalled DM 700 million (with the Federal and Laender Governments providing 2/3 and 1/3 respectively); on account of payments ahead of schedule and the problems this caused, however, the total funds available are to be raised by DM 200 million in the final year of the programme's life.

3. Results

The number of shipyards constructing new commercial vessels has declined continuously. Whereas 23 companies with 52 shipyards were still capable in 1976 of building sea-going vessels of 5,000 dwt and more, the number of companies active on this market was down to 17 with only 26 shipyards in 1988.

The total number of employed in the German shipbuilding industry dropped from 74,428 in 1976 to 34,035 in 1988, of which about 14,300 are employed for the construction of new commercial vessels.

A number of shipyards were closed down, while others were taken over by larger and more competitive companies.

Apart from this, the reduction of production capacities within the scope of diversification and restructuring measures is supported by a special programme in the coastal Laender.

Moreover, a tendency toward rising prices - prices which tend to cover more of the costs - can be observed on the international market.

The volume of existing orders has increased from 529,000 dwt (a share of 3.4 % of the global market) in 1986 to 856,400 dwt (4.8 %) in 1988. And also in 1989, the trends in both incoming orders and capacity utilization could be regarded as favourable.

Care is nevertheless taken at both the national and EC levels that existing production capacities are not raised and that previously closed-down capacities are not re-opened.

- The Iron and Steel Industry

1988 and also 1989 so far have been extremely successful years for the iron and steel industry.

= In 1988, crude steel output rose by 13 % against the preceding year to 41 million tonnes, thereby again reaching the level recorded in 1981; in the first six months of 1989, it expanded further by 3.5 % against the corresponding pre-year period.

= Between 1987 and 1988, rolled steel output increased by 10 1/2 % to more than 30 million tonnes; and in the first six months of 1989, it rose by a further 7 1/2 %.

= At 89 % capacity utilization in mid-1989, a ratio last recorded in 1974, production plants were running at practically full capacity.

= There have been no staff cuts since spring 1988.

= Cyclical activity in the iron and steel industry has been stable toward the middle of 1989 and should, according to currently prevailing assessments, remain so in the further course of the year. Whether a possibly lesser need for an expansion of stocks will cause it to slow down in 1990 is difficult to say at present.

The German iron and steel industry has not received any sector-specific aid since 31 December 1985. As a result of their improved earnings situation, the German iron and steel enterprises have on the contrary started to repay that part of the steel aid that was granted at the beginning of the 1980s subject to repayment under certain conditions (about half the total aid granted). It is to be expected that the major proportion of this aid will be paid back in the next few years.

The system of production and supply quotas for the iron and steel sector which was introduced at the beginning of the 1980s to support structural adjustment was abolished effective from 30 June 1988. This system provided for restrictions on the production and supply of certain iron and steel products in the EC.

(Original : ENGLISH)

2. JAPAN

I. Developments related to international trade

1. Export Insurance

In order to support the developing countries' efforts to implement adjustment programmes, Japan has decided to give flexibility on a case-by-case basis concerning the extension of export insurance to these countries.

2. Tariffs and GSP

(1) Japan has been making efforts to unilaterally reduce tariff rates in accordance with a series of external economic measures and 1986 "Action Program for Improved Market Access". As a result, the average Japanese tariff rate on industrial and mining products is among the lowest of major developed countries.

On April 1, 1989, tariff elimination or reduction on 175 items were implemented including those concerning tropical products on 123 items on a tariff line basis in accordance with an understanding reached at the Mid-term Review of the Uruguay Round.

(2) On April 1, 1989 some improvements and modifications were introduced in Japan's GSP scheme as described in TD/B/GSP/JAPAN/12 of 20 June 1989.

II. Structural Adjustment

1. Due to various policy efforts based on the Programme for the Promotion of Economic Structural Adjustment which was drawn up in the light of the recommendations of the Maekawa Report, and with the sharp appreciation of the yen since September 1985, structural adjustment has been advanced in Japan as the following examples indicate:

(1) The real economic growth rate in fiscal year 1988 was 5.1 per cent with vigorous domestic demand making a contribution of 6.9 per cent and external demand continuing to make a negative contribution (-1.7 per cent).

(2) While the export growth has leveled off, imports have increased substantially, especially those of manufactures. The external imbalances have steadily been reduced. (The import value in fiscal year 1988 increased by 19.7 per cent - 30.4 per cent in case of the import value of manufactures - in dollar terms over the preceding fiscal year and the ratio of manufactures to total imports reached 49.7 per cent).

(3) Japanese industrial activities have rapidly proliferated overseas as illustrated by the sharp increase in manufacturer's foreign direct investment - globalization of industrial activities. (The ratio of overseas production to the total production in fiscal year 1988 is estimated at 4.8 per cent. Based on a survey through a questionnaire circulation, the Ministry of International Trade and Industry estimates the ratio at 8 per cent in 1995 and 13 per cent in 2000.)

(4) Industries whose international competitiveness has declined such as coal and metal mining, and shipbuilding have undergone capacity reduction and rationalization.

(5) Enterprises have actively ventured into new areas of business activities such as electronics, new materials, biotechnology, information and telecommunications and diversified their operations.

(6) The service sector has expanded and increased its contribution to employment. (The number of the employed in the service sector rose by 790,000 from 1986 to 1988 on average.)

2. Thus Japan's economy has been shifting to one led by domestic demand and the external imbalances have been on the constant decline. (The ratio of the current account surplus to the nominal GNP has been decreasing from 4.5 per cent in fiscal year 1986 to 2.7 per cent in fiscal year 1988). Japan will continue to make further efforts for structural adjustment based on the above-mentioned programme, later revised in June 1988 in accordance with the five-year economic plan, "Economic Management within a Global Context", adopted in May 1988.

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OTHER ISSUES FOR CONSIDERATION BY THE BOARD AS MANDATED IN GENERAL ASSEMBLY RESOLUTION 1995 (XIX), AND IN THE CONTEXT OF THE RELEVANT PROVISIONS OF THE FINAL ACT ON INTERNATIONAL TRADE, AS WELL AS OTHER PERTINENT RESOLUTIONS OF THE GENERAL ASSEMBLY AND THE CONFERENCE

The impact of technological change on patterns of international trade

Note by the UNCTAD secretariat

1. It will be recalled that agreement on the provisional agenda for the second part of the thirty-fifth session of the Board was reached only on the eve of the session itself. Consequently, although the Board began consideration of the impact of technological change on patterns of international trade at that session, delegations recorded their need for more time to study the documentation submitted by the secretariat (TD/B(XXXV)/SC.I/CRP.2); and the Board subsequently decided to remit the theme of "The impact of technological change on patterns of international trade" to the second part of its thirty-sixth session.

2. In the interim, document TD/B(XXXV)/SC.I/CRP.2 has been re-issued in ... UNCTAD/ITP/16-UNCTAD/ITP/TEC/3 (attached).

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Impact of technological change on patterns of international trade

Note by the UNCTAD secretariat

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PREFACE

(i) Conference resolution 159 (VI) addressed a request to the Trade and Development Board, which was noted in the Final Act of UNCTAD VII, paragraph 105 (23), to review and study in depth developments in the international trading system and, in so doing, to make proposals as to its strengthening and improvement. Paragraph 105 (24) of the Final Act of UNCTAD VII, while recognizing the interrelationships between trade policies and other economic policies affecting growth and development, states that policies in other relevant areas, including technology, should be compatible and consonant with the international trading system. Moreover, new technologies and -- more generally -- technological change is a subject on which further work was encouraged by the Committee on Transfer of Technology in paragraph 2 of its resolution 31 (VI).

(ii) The rules and principles of the multilateral trading system as embodied in the GATT reflected the widely held belief among the drafters of the validity of the theory of comparative advantage. Protection was to be achieved through measures affecting the price mechanism i.e., the customs tariff, while quantitative measures were, in principle, to be prohibited. Liberalization was achieved through the binding of tariffs and their reduction through multilateral negotiations, from which the benefits of concessions would be extended to all through the application of the unconditional most-favoured-nation clause. The disciplines on non-tariff measures that could nullify the results of tariff negotiations were tightened through agreements on various Codes. Countries remained free to protect themselves against injury caused by unfair practices by Governments (subsidies) and enterprises (dumping) which were manifested in low ("unfair") prices. Such a system was designed to enable countries to specialize in those sectors where they had comparative advantage, leading to efficient allocation of resources at the international level and widely shared economic growth. However, earlier UNCTAD documentation, as well many other studies, have recognized the continuing process of erosion of this system.[1]

(iii) The network of world trade, its composition and direction has undergone transformation since the establishment of GATT 40 years ago. A variety of macroeconomic changes has contributed to this transformation and has altered the circumstances under which countries and regions trade with one another under the General Agreement on Tarriffs and Trade. The impact on trade of relatively shorter term developments -- such as financial instability, divergent exchange rate movements, fluctuating prices of energy and primary products, and increased levels of indebtedness need to be contrasted with the effects of more profound, longer-term forces. Among the latter is technical progress. New products and improved processes of production have contributed to the fast growth of manufactures in world trade; and the countries that have experienced the most rapid overall expansion in their trade during the 1980s have been those with the largest share of manufactures in their total exports. It is argued that technological change is one of the important factors explaining the recent evolution of international trade and the increasing divergence in trade performance. There follow a number of implications for the structures of international trade relations, and for the extent to which developing countries are able to share in the benefits arising out of international trade.

(iv) The purpose of this note, which builds on the *Trade and Development Report, 1987*, part II, and the documents for the Committee on Transfer of Technology, is to make a preliminary assessment of the implications of technology and technological change on the patterns of international trade which has a bearing on the nature of international trade relations. Accordingly, chapter I reviews empirical evidence on the impact of recent technological advances on trade in raw materials and manufactures. Chapter II interprets these findings in terms of their implications for international competitiveness. Chapter III examines how technological competitiveness has affected thinking about the determinants of international trade and the policy responses that have sprung from it. Finally, chapter IV draws some conclusions regarding implications for the systemic aspects of international trade.

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1 See, in particular, TD/328/Rev.1.

SUMMARY

(v) The impact of technological change on international trade has been multifaceted. The declining raw material intensity of finished products, resulting from the generation of product innovations having a higher knowledge content, the substitution among materials, reduced wastage and new and improved knowledge methods of processing, have contributed to the slower growth or even decline in the international trade of raw materials. The pattern of international trade in manufactures has also been influenced by technological change. Products of high R and D-intensive industries, although accounting for a small proportion of world trade in manufactures, have tended to be among the more rapidly growing exports. The relative competitive strengths of different countries and country groupings has shifted. As measured by trade performance, the developed market-economy countries as a group have kept their competitive advantage in high technology items although there have been important shifts among individual countries. Developing countries as a group and China have been able to penetrate market-economy country imports in a large number of manufactures of high-, medium- and low-R and D-intensive industries but there has been considerable diversity in their performance.

(vi) The shift in competitive positions of countries in manufacturing trade has paralleled a similar realignment of their standing with respect to innovative capacity. Evidence from individual industries as well as the evolution of the main aggregate indicators of technological performance (such as R and D expenditures, patent registrations, productivity, foreign direct outflows and capital goods exports) shows that the lead of the United States over its main industrialized competitors has narrowed over the past two decades. A more heterogeneous pattern of interaction between economic and technological factors is responsible for the challenge arising from major developing country exporters of manufactures owing to the striking contrasts in their natural resource endowments, size of domestic economies, contribution of foreign direct investment, participation of the public sector and historical background. The result which these countries have achieved has not been founded simply on concentration in high R and D-intensive items, but on the ability of their firms to rationalize production methods, raise product quality and reduce production costs in medium and low R and D-intensive industries.

(vii) The rising importance of technology as a determinant of the relative positions of countries and firms in the world economy has affected thinking about the character of international trade. Thus, whereas traditonal trade theory based on the principle of comparative advantage continues to be empirically meaningful, it is increasingly recognized that the ability of a country's firms to capture market share is dictated less by its relative endowment of traditional factors of production than by its level of technological development.

(viii) Technological change affects the competitiveness of a country's industries via two main types of processes - innovations and diffusion (imitation plus transfer of technology). Innovations contribute by enabling industries in one country to earn higher wages and profits than industries in other countries because of the monopoly prices they can obtain from new products. But new industries decline or disappear sooner or later in the originating country as the innovated product is imitated and/or improved upon by some countries or because of lower-wage competition from other countries to which the technology is transferred, or by some combination of the two. To continue to earn higher wages and profits, the originating country's industries can maintain their monopolistic edge by keeping the product cycle short and generating a continuous flow of innovations. Similarly, to remain competitive, industries from the other countries have to continuously adopt and/or improve upon the innovations generated by the industries in the originating countries.

(ix) But while the operation of such mechanisms has allowed a number of developing countries to achieve competitive success in a wide range of products, a large number of developing countries have not been so successful; first, because they specialize in products which have been experiencing slow demand growth or are protected by non-tariff barriers of various kinds; secondly, because they lack the combination of technical skills, manufacturing expertise and organizational and marketing capabilities that would enable them to make and fully exploit cost-reducing process innovations and quality improvements in their traditional areas of specialization; and finally because of the sharp compression of foreign and domestic savings available for investment in renewing

equipment and in acquiring the more modern technology resulting from the debt crisis and the general deterioration in the economic environment.

(x) The incidence of trade imbalances and the growing perception that technological advance is a key element in trade performance and economic growth have prompted the Governments of some developed market-economy countries to adopt policy measures aimed at stimulating, protecting or bolstering the competitiveness of national industries. Trade measures have included *inter alia*: an increasing resort to the application of tariffs, quantitative restrictions, countervailing and anti-dumping actions, and neglect of the unconditional most-favoured-nation clause in favour of conditional and bilateral or unilateral arrangements involving threats of retaliatory trade measures. Steps have also been taken to stimulate technological advance through government sponsorship of applied research, granting of fiscal and other incentives for R and D, grants and soft loans for the establishment of new industries, and public procurement policies. Other measures aimed at promoting the competitive edge of domestic enterprises have included the restructuring of the legal framework governing competition among them, the enlargement or strengthening of patent or copyright privileges and the liberalization of the application of laws on mergers, R and D collaboration among enterprises and restrictive practices in licensing agreements. Moreover, since national regimes of intellectual property protection are territorialy limited, bilateral and multilateral initiatives have been taken with the aim of ensuring world-wide protection of technological assets through harmonization of the standards of such protection.

(xi) The desire to promote innovation has also gained ground in some developing countries. Since, however, in the majority of them, the pursuit of such policies is severely constrained by lack of resources and a weak scientific and technological base, foreign investment and technology transfer are the main source of technological innovation. Despite the liberalization of policies governing foreign investment and transfer of technology in the 1980s, some aspects of these policies continue to be perceived by transnational enterprises as conflicting with their global competitive strategies, or by industrial countries as conflicting with their trade and technological interests. It appears that the technology related policies of both developed and developing countries have the potential of leading to conflicts entailing an erosion of the multilateral trading system embodied in GATT. It is important, therefore, that the trading system, while taking into consideration the links between trade and technology policies, should pay special attention to the need for technological development of technologically weak countries, particularly of the developing countries.

(xii) An open, improved and strengthened trading system will be more meaningful if it provides opportunities to developing countries to enlarge their share in world trade. This, however, would call for more secure and improved access to markets to be combined with internationally adopted measures aimed at facilitating the transfer of technology to them. It implies *inter alia* a balance between the privileges provided to investors and the social cost of such privileges, the reduction of the possibilities of abusive use of intellectual property rights and recognition and reinforcement of the right of developing countries to develop their indigenous technological capacities, including the right of promoting and maintaining legislations and regulations compatible with their development needs.

(xiii) For a large number of developing countries an improvement in the world economic environment and solution of the debt problem is a necessary condition for attracting an increased flow of technology to their economies and for enabling them to develop indigenous technological capacities. For the poorer among them, however, additional multilateral support would be needed. Investment projects supported by multilateral financing institutions could be broadened to include technological capacity building and skill formation. An important contribution would be to assist developing countries to strengthen their service sectors in order to promote their ability to innovate, to penetrate world markets and derive value added from their exports.

CHAPTER I

TECHNOLOGY AND INTERNATIONAL TRADE

A. The changing map of world trade

1. The geographical pattern of world trade has been undergoing a process of transformation in recent decades. Most dramatic has been the change taking place in the identity of some of the main protagonists and their relative quantitative weights in the international trading system, particularly during the present decade. This is seen most clearly by comparing their rates of export growth with the average growth rate of total world trade as shown in annex table 1. During the relatively more prosperous 1970s as a whole, growth rates significantly higher than the world average of around 20 per cent per annum were recorded by a large number of developing countries in both West and South and South-East Asia, whereas most of the other major regions comprising developed and developing countries did not deviate far from this average. The 1980s have seen an increased dispersion in export growth performances around the significantly slower average growth of world trade of about 6 per cent per annum. The differential incidence of stagnating raw material markets, falling oil prices, indebtedness, exchange rate disparities and other macroeconomic developments on different groups of countries has been widely reviewed in UNCTAD reports and elsewhere. These factors help to account for the below-average export growth and therefore declining export market shares of many of the countries as shown in annex table 1. Nevertheless, the ability of different countries to adjust to the effects of economic shocks varies. Some countries are better able than others to generate new product innovations that shift demand patterns in their favour. Some countries are also better able than others to shift out of slow-growing resource-based exports and into existing items having a higher value added. Those countries, for example, whose enterprises were able to make the technological and related organizational and managerial decisions necessary to take advantage rapidly enough of the growing import demand in the United States for consumer electronics and other non-traditional products have shown rapidly growing exports. Firms in some countries have succeeded in updating skills and technologies sufficiently to obtain cost advantages over competitors in more traditional products such as metals, textiles and clothing. The main argument of this and the subsequent chapter of this report is that differences in the level and accumulation of technological capabilities, as well as related organizational and marketing skills, weigh heavily in explaining the recent evolution of international trade and the extent to which countries, especially developing countries are able to share in the benefits of the international trading system.

B. Trade in raw materials

2. Previous UNCTAD reports have reviewed the influence of technology on international trade in raw materials and manufactures.[2] With respect to raw materials trade, the most striking technological changes have been those that have affected their consumption in the developed countries over the past 25 years. Table 1 presents up-dated figures on the rate of growth of the volume of apparent consumption of nine agricultural raw materials and 12 minerals, ores and metals in the developed market-economy countries from the early 1960s through 1986. The single most important influence on the behaviour of consumption of raw materials has been that of GDP, whose slower growth since the early 1970s helps to explain the generally weaker raw material demand as

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2 See "Impact of new and emerging technologies on trade and development: a review of the UNCTAD secretariat's research findings" (TD/B/C.6/136), 14 August 1986; and "Part Two, Technology, technology flows and international competitiveness" in *Trade and Development Report, 1987*, United Nations publication Sales No. E.87.II.D.7, New York, 1987.

Table 1

Volume of consumption [a] of selected raw materials in developed market-economy countries

	Consumption (thousand tons, annual average)				Annual rate of growth (per cent)			
	1961-1963	1971-1973	1981-1983	1984-1986	1961-1963 to 1971-1973	1971-1973 to 1981-1983	1981-1983 to 1984-1986	1961-1963 to 1984-1986
Agricultural raw materials								
Sugar	24 638	31 296	29 008	27 325	2.4	-0.8	-0.3	0.5
Natural rubber	1 394	1 953	2 009	2 305	3.4	0.2	1.3	2.2
Cotton	4 335	4 063	3 364	3 594	-0.5	-2.0	1.1	-0.8
Jute	1 327	1 123	616	523	-1.7	-5.7	-1.4	-4.0
Sisal	514	425	121	102	-1.9	-11.5	-1.3	-6.8
Abaca	92	49	39	37	-5.7	-2.2	-0.6	-3.9
Wool, greasy	1 648	1 405	1 006	1 106	-1.6	-3.3	1.3	-1.7
Industrial roundwood, non-coniferous	141 436	207 416	191 609	156 686	3.9	-0.8	1.4	0.5
Cattlehides and calf skins	1 810	2 025	1 891	1 864	1.3	-0.7	0.5	0.2
Minerals, ores and metals								
Manganese ore	6 309	10 856	8 046	7 684	5.6	-3.0	-0.7	0.8
Bauxite	4 279	9 364	11 393	12 689	8.2	2.0	1.2	4.8
Alumina	3 841	9 050	10 306	10 816	8.9	1.3	0.5	4.6
Primary aluminium	3 724	9 035	9 970	10 799	9.3	1.0	1.0	4.7
Copper ore	2 077	3 459	3 435	3 201	5.2	-0.1	-0.8	1.9
Refined copper	4 025	5 923	6 101	6 569	3.9	0.3	0.5	2.2
Iron ore	147 184	266 188	210 542	218 753	6.1	-2.3	0.4	1.7
Tin ore	45	42	27	71	-0.5	-5.5	1.3	2.0
Primary tin metal	156	166	121	367	0.4	-3.0	0.2	3.8
Nickel ore	245	424	310	353	5.7	-3.0	1.5	1.6
Nickel, unwrought	222	440	443	528	7.1	0.2	2.0	3.8
Phosphate rock	33 113	56 221	65 691	67 030	5.5	1.5	0.2	3.1

Source: UNCTAD secretariat computations based on data from various issues of FAO, *Production and trade yearbook*; International Sugar Organization; International Rubber Study Group; International Cotton Advisory Committee; FAO, *Yearbook of forest products*; FAO, *Commodity review and outlook*; UNCTAD, *Yearbook of international commodity statistics*.

a Actual or reported consumption for sugar, natural rubber, cotton, jute, primary aluminium, refined copper, primary tin metal and nickel, unwrought. Apparent consumption for other commodities.

compared with the 1960s. However, movements in GDP do not account for the downward shifts in the intensity of use -- the amount of raw materials directly consumed per unit of GDP, depicted in charts 1 and 2. Nor can the falling consumption of the five main fibres shown in table 3 be reconciled with the fairly rapid growth of GDP in developed market-economy countries during the 1960s. The declining intensity of materials use is not an entirely new phenomenon. In fact, Prebisch drew attention to it as one element of his analysis of the causes of the chronic disparity between the rates of growth of primary exports and manufactured imports of developing countries.[3] Behind this tendency was the driving force of technological advance in the industrial centres which manifested itself *inter alia* by reducing the material content of finished goods and by substituting synthetics for natural products, thereby depressing both the volume and prices of primary exports. Equally important, in his view, a significant part of the increased per capita income generated by technical progress went into the demand for services and industrial goods rather than for staple consumer goods.

3. There are a number of features that distinguish the present trend from what was first observed by Prebisch. First, the process has accelerated since the early 1970s -- extending not only to fibres but also to most ores and metals. The application of innovations in developed countries based on the application of microelectronics to a wide range of new or improved products boosted the demand for goods and services having a higher knowledge and, therefore, lower material content on the average than what was previously consumed. In money terms it means that the direct and indirect contribution of R and D expenditures per unit in the final price of, for example, an automobile is increasing at the expense of raw materials and other factors of production. Of even greater significance since the early 1970s has been the impact of technological innovations resulting in a reduction in the amount of traditional raw materials consumed in the manufacture of already existing intermediate and final products. The innovations are of two types: substitution of one material by another or materials saving. Substitution has been going on since the Industrial Revolution and earlier. However, the intensified competition to reduce costs and improve quality between different materials and among the consumers of these materials has ultimately had the effect of saving on the use of such materials. The upward shift in energy prices and heightened concern over the environment in the 1970s, as well as the search for ways of reducing costs induced by the economic slow down, gave strong impetus to economization of materials to which both producers and consumers have contributed. Taking metals as an example, producers have adopted more efficient metallurgical technologies permitting an increase in the rate and a reduction in the cost of extraction of metals from ores, thereby reducing the amount of ore consumed per unit weight of metal. As reported in the earlier UNCTAD study,[4] the desire to save on energy and capital costs has induced renewed efforts to recover a number of materials from waste and scrap, including paper, glass, copper, lead, steel, zinc, chromium, tin and others. New methods for processing primary metals are generating superior combinations of strength, resistance to oxidation and a variety of other desired properties. On the demand side, these improved properties, while enabling a metal to enlarge its market share over competing materials, also permit it to last longer and be used more efficiently, thereby moderating the increase in its consumption. Reduced wastage of metals, fibres and other materials has been made possible by the higher standards of quality, greater precision and lower rejection rates that have resulted from computerized manufacturing technologies. The downsizing, weight reduction, changes in design and greater durability of many manufactured products have also contributed a downward pressure on the demand for materials.

C. Trade in manufactures

4. Technological change has also exerted an influence on the pattern of international trade in manufactures. In assessing this influence, the following discussion focuses on the changing composition of manufacturing trade and the competitive performance of different countries and country groupings.

5. It is sometimes argued that the advantage of the United States in world trade in parallel with higher average levels of real wages over much of this century was due to the ability of its firms to

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3 United Nations Economic Commission for Latin America, *The economic development of Latin America and its principal problems*, New York, 1950.

4 "Impact of new and emerging technologies...", *op.cit.*

Chart 1: INTENSITY OF USE OF SELECTED AGRICULTURAL RAW MATERIALS IN DEVELOPED MARKET-ECONOMY COUNTRIES

1961/63 = 100

(Consumption in tons per billion of GDP)

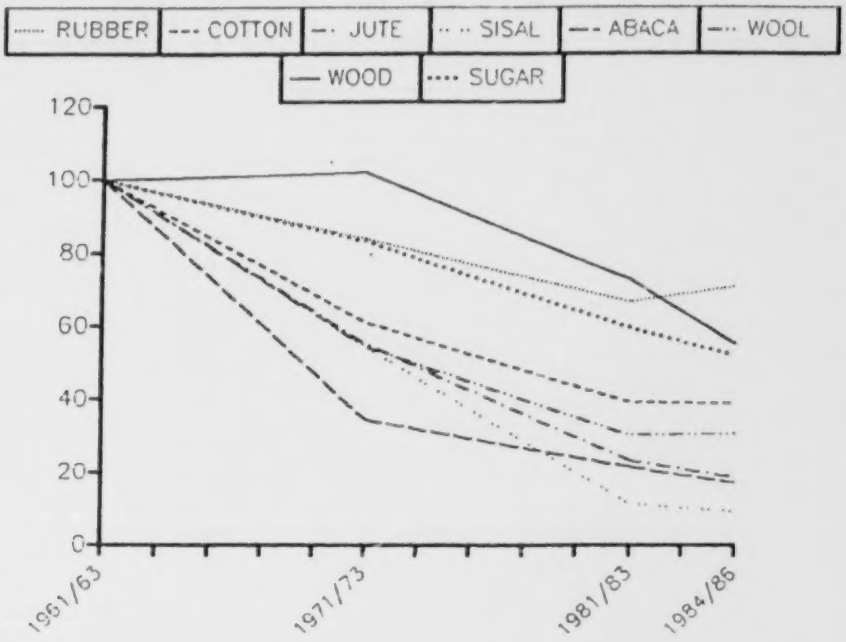
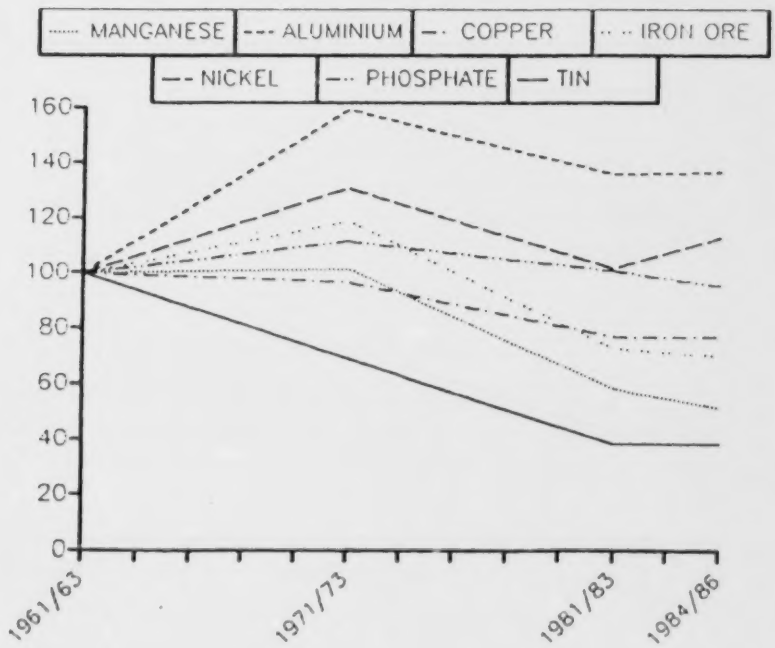


Chart 2: INTENSITY OF USE OF SELECTED MINERALS, ORES AND METALS IN DEVELOPED MARKET-ECONOMY COUNTRIES

1961/63 = 100

(Consumption in tons per billion of GDP)



Source: Same as table 1, plus GDP figures from the United Nations Statistical Office.

constantly produce and sell manufacturing exports concentrated in new, unique products from which they could exploit temporary monopoly profits. As particular items or the processes for manufacturing them became standardized and could be sold by lower wage countries, United States firms would have developed more advanced technologies or improved versions of the products whose revenues would offset the gradual loss of markets of the more standardized products.[5] Following this type of reasoning, numerous attempts have been made in analysing trade performance to single out those items which correspond to the newer and more dynamic elements in the growth of manufactured exports. Since these product groups have tended to be concentrated in industries with relatively higher R and D activity, the practice in analysing trade performance has been to group export figures according to whether the product categories come from industries having a higher-than-average, medium or lower-than-average ratio of R and D spending to production. In gauging the relative competitiveness of a country in manufactures trade, therefore, it is of some interest to observe its relative degree of specialization in high R and D-intensive or "high technology" products.[6]

6. Using one such method of classification, previous UNCTAD reports and other studies have shown that, although the products of high R and D-intensive industries account for a small proportion of world manufactures trade and of employment generally, they have tended to be among the relatively more rapidly growing exports.[7] A comparison of the significance of high technology items in the exports of individual countries shows the United States as being the most specialized in such exports. They accounted for nearly 50 per cent of that country's manufactured exports to other OECD countries in 1985 compared with an OECD average of only 23 per cent and a figure of 35 per cent for Japan and 18 per cent for developing countries as a group.[8] At the same time, these exports have been growing more rapidly than exports of manufactures as a whole.

7. It is increasingly common to identify international competitive strength with macroeconomic measures of trade performance, i.e. of the ability of a country's firms to produce and sell goods and services in the international market in competition with firms from other countries. In terms of two such measures -- the trade balance (exports minus imports of manufactures) and export market shares -- a significant shift has taken place in relative positions of countries and of groups of countries since 1970. The main trends are highlighted below, based on the preceding definition of high technology products.

(a) There has been a catching-up with the United States by other leading industrial powers, notably by Japan and the Federal Republic of Germany (see table 2). Thus, for example, the balance of manufacturing trade of the United States in the imports of developed market-economy countries as a group has been increasingly negative since the early 1980s. The balance in high technology items during the same period has been positive but declining and became negative in 1987.[9] Japan, and to a lesser extent, the Federal Republic of Germany have registered substantial and growing surpluses in both high and medium R and D-intensity items. Since the early 1980s, Japan has more than tripled its trade balance in high R and D-intensity products, while its balance in low R and D-intensity products became negative in 1987, reflecting changing trade patterns in Asia.

(b) Developing countries as a group and (from a low level) China have also been able to penetrate developed market-economy country imports in all three R and D-intensity categories countries (see table 3). Symmetrically, the share of intratrade among developed market-economy countries has been falling since 1970 in high technology and other manufactures. As can be seen from annex table 2, developing countries as a group increased market share in a wide range of products in all three categories of R and D intensity.

(c) The socialist countries of Eastern Europe have more or less maintained market shares of their manufactures in the developed market-economy countries.

(d) The trade performance of a relatively small number of higher-income, rapidly growing countries has outpaced that of the remaining developing countries (see table 3). Low-income,

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5 R. Vernon, "International investment and international trade in the product cycle", *Quarterly journal of economics*, vol. 80, May 1966.

6 For a discussion of the limitations of the concept of R and D intensity in interpreting the technology content of trade, see *Trade and Development Report, 1987, op. cit.*, page 115.

7 For the breakdown into R and D intensity categories, see annex table 2.

8 UNCTAD secretariat calculations based on United Nations Statistical Office data (Comtrade).

9 For a more comprehensive discussion of the factors which have contributed to the dramatic rise in the deficit of the United States, see UNCTAD *Trade and Development Report, 1988*, part I, chapter 3.

Table 2

Balance of trade in manufactures of selected developed market-economy countries by category of R and D intensity

(Millions of dollars)

Reporting country	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987
France										
High	-172	788	-334	345	965	1362	2094	2270	887	744
Medium	1208	6181	8237	7362	3850	5350	6711	6203	5320	3384
Low	606	2933	1059	3289	-1701	-734	610	-867	-3177	-7134
Total balance	1642	9902	8962	10996	3113	5978	9415	7606	3030	-3006
Germany, Fed. Rep. of										
High	2271	5724	9714	7617	9059	7969	8490	6761	9109	11201
Medium	10430	26435	47475	45573	48391	43615	44449	47503	64309	76586
Low	-1541	-779	-12503	-7086	-5649	-9337	-8047	-6228	-5343	-7348
Total balance	11161	31380	44686	46104	51800	42247	44891	48036	68075	80438
Italy										
High	13	19	-1146	-1007	-390	-123	-1092	-1571	-2431	-4458
Medium	1715	5506	4471	6391	6534	8647	7384	7320	7729	6288
Low	943	4566	7715	12488	11313	10392	8887	8882	13968	13316
Total balance	2672	10091	11040	17873	17456	18916	15179	14631	19266	15146
Japan										
High	1030	4093	14734	18798	16775	20845	27738	28071	37689	45249
Medium	4227	16941	52152	65072	57965	63315	73956	81468	98881	102053
Low	4994	13230	10670	16732	15106	11835	11662	10031	6457	-5935
Total balance	10252	34264	77556	100603	89847	95994	113356	119569	143027	141367

Table 2 (concluded)

Balance of trade in manufactures of selected developed market-economy countries by category of R and D intensity

(Millions of dollars)

Reporting country	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987
United Kingdom										
High	1226	2872	5133	4262	3411	995	-842	-486	-1268	-3048
Medium	4002	8411	13695	5439	1835	-1388	-995	359	-1904	-148
Low	-2364	-6212	-8915	-9605	-10371	-11081	-14054	-12352	-15756	-19330
Total balance	2864	5071	9913	96	-5125	-11474	-15891	-12479	-18928	-22527
United States										
High	4736	10462	21476	21450	17393	14558	4095	3364	46	-938
Medium	2164	11505	4652	3760	-7848	-23286	-44372	-62688	-83955	-85858
Low	-6410	-12057	-25206	-32103	-31918	-41877	-65518	-70393	-70524	-76219
Total balance	490	9910	922	-6893	-22373	-50605	-105795	-129717	-154433	-163015

Source: UNCTAD secretariat calculations based on United Nations Statistical Office trade data (Comtrade).

Note: For the methodology of classification into R and D intensity category see note to annex table 2.

Balance of trade in:

High = High R and D intensity category;
Medium = Medium R and D intensity category;
Low = Low R and D intensity category;
Balance = High, Medium and Low intensity categories.

Table 3

Manufactures imports of DMECs by R and D intensity and major region or analytical group of origin

A. High R and D intensity

Region or analytical group of origin	Market share (per cent)					Value ($ billion)	Annual average growth rate (per cent)		
	1970	1975	1980	1986	1987	1987	1970-75	1975-80	1980-87
World	100.00	100.00	100.00	100.00	100.00	256.6	20.1	19.8	10.2
Developed market-economy countries	96.88	92.96	89.33	87.10	86.19	221.2	19.1	18.8	9.7
Socialist countries of Eastern Europe	.53	.85	1.11	.50	.50	1.3	32.0	26.3	-1.5
Socialist countries of Asia	.02	.04	.08	.14	.21	0.5	43.6	37.0	25.7
Developing countries	2.57	6.15	9.48	12.25	13.10	33.6	43.1	30.6	15.4
By income group (GDP per capita):									
Less than $500	.17	.22	.59	.34	.32	0.8	25.8	45.8	1.3
$500-1500	.09	.26	.75	.81	.83	2.1	50.3	47.9	11.8
Above $1500	2.31	5.67	8.14	11.10	11.94	30.7	43.8	28.8	16.4
By region:									
America	.91	1.99	2.03	2.92	2.72	7.0	40.4	20.2	14.9
Africa	.11	.15	.58	.29	.31	0.8	29.3	56.2	0.9
Asia	1.33	3.78	6.66	8.82	9.85	25.2	48.2	34.1	16.6
Oceania	.00	.00	.01	.00	.00	0.0	28.4	43.1	5.9
By analytical group:									
Major petroleum exporters	.64	1.59	1.70	2.52	2.45	6.3	44.2	21.4	16.1
Major manufactures exporters	1.49	3.52	5.36	7.56	8.54	21.9	42.7	30.3	17.8
Least developed countries	.01	.03	.39	.16	.19	0.5	47.1	94.0	-0.7
Remaining countries	.43	1.01	2.03	2.01	1.93	5.0	42.8	37.8	9.4

Table 3 (continued)

Manufactures imports of DMECs by R and D intensity and major region or analytical group of origin

B. Medium R and D intensity

Region or analytical group of origin	Market share (per cent)					Value ($ billion)	Annual average growth rate (per cent)		
	1970	1975	1980	1986	1987	1987	1970-75	1975-80	1980-87
World	100.00	100.00	100.00	100.00	100.00	630.3	19.3	18.6	8.7
Developed market-economy countries	94.27	93.89	91.88	90.33	88.94	560.5	19.2	18.0	8.2
Socialist countries of Eastern Europe	1.11	1.37	1.33	.94	.85	5.4	24.4	17.9	2.0
Socialist countries of Asia	.14	.18	.27	.43	.64	4.0	25.0	28.3	22.7
Developing countries	4.47	4.56	6.51	8.30	9.57	60.3	19.7	27.3	14.8
By income group (GDP per capita):									
Less than $500	.35	.43	.55	.51	.51	3.2	24.2	24.3	7.6
$500-1500	1.04	.85	1.04	.66	.73	4.6	14.6	23.4	3.4
Above $1500	3.08	3.28	4.92	7.12	8.32	52.5	20.8	28.6	17.1
By region:									
America	1.34	1.30	1.57	1.72	1.97	12.4	18.6	23.0	12.3
Africa	.42	.26	.27	.23	.28	1.8	8.0	19.8	9.5
Asia	2.27	2.54	4.22	5.98	6.95	43.7	21.9	31.3	16.7
Oceania	.28	.29	.23	.08	.07	0.5	20.8	12.3	-7.2
By analytical group:									
Major petroleum exporters	.56	.61	.81	1.15	1.31	8.3	21.2	25.5	16.4
Major manufactures exporters	1.95	2.32	3.75	5.65	6.62	41.7	23.6	30.5	17.8
Least developed countries	.13	.11	.10	.06	.06	0.5	15.0	16.2	1.9
Remaining countries	1.82	1.51	1.84	1.43	1.57	9.9	14.9	23.3	6.2

Table 3 (concluded)

Manufactures imports of DMECs by R and D intensity and major region or analytical group of origin

C. Low R and D intensity

Region or analytical group of origin	Market share (per cent)					Value ($ billion)	Annual average growth rate (per cent)		
	1970	1975	1980	1986	1987	1987	1970-75	1975-80	1980-87
World	100.00	100.00	100.00	100.00	100.00	552.9	19.5	16.4	4.5
Developed market-economy countries	80.06	76.47	73.25	72.04	70.91	392.0	18.4	15.4	4.2
Socialist countries of Eastern Europe	3.47	4.24	4.47	3.39	3.34	18.5	24.4	17.7	.5
Socialist countries of Asia	.53	.63	1.07	1.91	2.16	11.9	23.6	29.5	15.8
Developing countries	15.77	18.66	21.21	22.66	23.59	130.4	23.6	19.4	6.3
By income group (GDP per capita):									
Less than $500	2.24	1.79	2.21	2.24	2.61	14.4	14.3	21.3	7.3
$500-1500	2.77	3.39	2.87	3.17	3.43	19.0	24.4	12.6	7.4
Above $1500	10.75	13.48	16.13	17.25	17.55	97.0	25.0	20.7	6.0
By region:									
America	6.45	7.11	6.81	5.25	4.78	26.4	21.8	15.4	-0.4
Africa	1.73	1.65	2.02	1.85	1.90	10.5	18.4	21.2	3.8
Asia	6.68	9.03	11.5	14.6	16.00	88.3	26.9	22.3	9.7
Oceania	.19	.25	.18	.09	.07	0.4	26.7	9.0	-8.4
By analytical group:									
Major petroleum exporters	3.48	3.99	5.44	4.46	4.47	24.7	22.8	23.9	1.8
Major manufactures exporters	5.80	6.88	8.84	12.17	12.61	69.7	23.7	22.4	10.2
Least developed countries	.42	.32	.33	.26	.29	1.6	13.7	17.1	2.6
Remaining countries	6.06	7.46	6.59	5.76	6.22	34.4	24.6	13.6	3.9

Source: UNCTAD secretariat calculations based on United Nations Statistical Office trade data (Comtrade). Regarding the methodology of classification into R and D intensity category see note to annex table 2.

and particularly least developed, countries have experienced lower than world-average export growth rates of manufactures during this decade.

8. Although the behaviour of trade balances and market shares gives a good first approximation of the revealed competitive strength of countries in the world economy, it tells only part of the story. It does not tell how, or under what conditions the trade performance was achieved or whether it is sustainable. It can be argued that the ultimate measure of success of a country's trade performance is whether such performance enables its population to earn a rising standard of living. Under this stricter definition of competitiveness as the ability to capture market share while achieving an acceptable rise in living standards, the preceding observations on trade performance would need qualification or reinterpretation. First, the erosion of the competitive lead of the United States *vis-à-vis* the Federal Republic of Germany, Japan and other industrial countries is somewhat greater than is implied by the decline in its trade balances in manufacturing, since real wages in the United States have not risen since 1973 and productivity growth has been lagging behind that of its competitors. In other words, part of the success that was achieved by United States exporters in international markets is attributable to the stagnation of real wages. Secondly, the competitiveness of developing country firms in the world economy is also more limited than is suggested by trade performance. Varying success in manufactures export penetration by Latin America, petroleum producing and (to a lesser extent) African countries during the 1970s, and an accompanying rise in living standards, were facilitated in part by external financing of plant and equipment imports. However, the failure of productivity growth to overtake the rate of borrowing contributed, together with generally worsening economic conditions in the world economy, to the present situation in which export receipts from manufactures and raw materials are being diverted to the servicing of external debt, as both productivity and incomes fall. Depressed investment rates in the indebted countries, by impeding renewal of their machinery and acquisition of new technology, are likely to cause a deterioration of the future capacity to compete.

CHAPTER II

ROLE OF TECHNOLOGY IN INTERNATIONAL COMPETITIVENESS

9. The shifts in the competitive positions of different countries in international trade in high technology items and other manufactured goods parallels a similar realignment of their relative standing with respect to innovative capacity. Although the capacity of the United States to generate new and potentially competitive technology remains strong, the main aggregate indicators of technological effort and performance (non-defense R and D spending, patent registrations, and productivity growth) show its lead over its main industrialized country competitors to have narrowed in the last two decades. Systematic empirical research has confirmed the link between technological performance and trade competitiveness while not denying the importance of the size and scale effects of large countries, proximity to the major foreign markets, input prices and the relative abundance of capital or labour in the economy.[10]

10. More striking is the situation in a number of individual industries such as semiconductors, consumer electronics, automobiles, steel and textiles.[11] Intense international competition has eroded what had, at various stages of recent history, been considered the hegemony of the United States in these industries. Technological innovation and imitation in products and processes, the exploitation of steep learning curves and the adoption of aggressive marketing strategies have enabled newcomers to challenge the position of established firms. Aided by the acquisition of imported technological know-how but also by their own technological efforts, firms from some developing countries and territories as different as the Republic of Korea, Taiwan Province of China, India and Brazil have joined the contenders in these and other industries, and have become exporters of technological know-how in their own right.

11. A lesson to be learned from analysis of the experience in individual industries, that is not predictable from statistical indicators of technological performance alone, is that the ability of a country's firms to generate innovations does not necessarily imply that it will be those same firms that will ultimately profit the most from them. In practice, most innovations are difficult to keep secret. Once a new product or new process is launched on the market for the first time, competitors will be drawn in with imitations or with their own improved variations on the item. Who wins the greatest share of the market in the long run depends not only on being first to commercialize the innovation but also, or more importantly, on possessing or on having favourable access to a number of complementary technological (and non-technological) assets. Among the most important of these assets are capabilities in manufacturing, marketing and after-sales service. Inter-country differences in access to such technology-related assets, therefore, are an additional element in explaining competitive success in certain industries. For example, it is likely to explain the stronger performance of Japanese as distinct from United States and European companies in some segments of the electronics industry.

12. Statistics on outflows of technology embodied in foreign direct investment and capital goods exports conform to the impression of a closing of the technology gap between the United States and its leading competitors, although foreign exchange rate differentials are an additional explanatory factor in the case of investment. From being responsible for an average of 60 per cent of the world outflow of foreign direct investment and 30 per cent of world exports of capital goods in the 1960s, the United States has become the largest net recipient of foreign direct investment and a net importer of capital goods during the present decade. In terms of technology receipts from licensing royalties and consultancy fees, the United States remains the undisputed leader. However, such receipts are more a reflection of past than of present United States success in innovation. The declining relative importance of the United States as a net supplier of technology is part of a more general trend since the 1970s marking a diversification of technology sources, particularly for developing countries.

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[10] For a summary of this research see *Trade and Development Report, 1987, op.cit.*, pp. 113 and 123.

[11] *Ibid*, pp. 124-126 and Annex 1.

13. Thus, the competitive landscape has altered over the post World War II period. However, the perception of a relative decline in United States competitiveness deserves some qualification in light of the world economic situation towards the earlier decades of this period, when both the Federal Republic of Germany and Japan, today's most dauntless competitors, were still in the process of reconstructing their industrial fabric. Moreover, the technological hegemony of the United States until the 1960s had in part been built on important civilian applications of military technology being developed under pressure of the Cold War -- a trend that has not characterized more recent development of military-defense systems.[12] Europe's and Japan's industrial and technological revival in a multilateral framework of relatively free trade was an objective of the economic policies of the United States. Given rising educational standards, a narrowing of per capita income levels, a free movement (among market-economy countries) of capital and know-how and ready access to energy and raw materials, it would have been surprising if the United States had maintained its technological dominance. Drawing on a revised version of the product cycle analysis of Vernon, one economist has elaborated on this point by noting that:

> "...until very recently, the gap in per capita income between the United States and other industrial countries meant that these countries had little incentive to develop products that would compete in the more affluent United States market, whereas United States products, through simplification and standardization, could increasingly compete in foreign markets. In addition, the size of the United States market generated economies of scale in production that gave American exports a price advantage against local producers in smaller foreign markets. In many cases this advantage was offset by trade barriers or high excise taxes in foreign markets, but in others it was not. This situation inevitably disappeared not only by the closing the income gap but by the integration of the European market through the European Economic Community (EEC) and the remarkable growth of the Japanese domestic market."[13]

14. A more heterogenous pattern of interaction between economic and technological factors is responsible for the challenge (noted previously) arising from the major developing country exporters of manufactures owing to striking contrasts in natural resource endowments, size of domestic economies, contribution of foreign direct investment, participation of the public sector and historical background. Perhaps the one common feature of cases as diverse as those of Brazil, Hong Kong, Republic of Korea, Singapore and Taiwan Province of China, has been their ability as latecomers to direct their energies and catch up and improve their competitiveness on the basis of company-specific and country-specific learning and organizational change.

15. It should be noted that the competitive success of these exporters and the emergence of a number of other exporting countries such as China, Colombia, Indonesia, Malaysia and Thailand, is not founded simply on concentration in high R and D-intensive items, but on the ability of their firms to rationalize production methods, raise product quality and reduce production costs in medium and low R and D-intensive industries such as less sophisticated electrical and non-electrical machinery; metals; shipbuilding; textiles, clothing and footwear; and miscellaneous food products. This is due both to the development and application of indigenous engineering and design capabilities and to the accelerated acquisition of machinery, components and various technical inputs from foreign suppliers in the higher R and D-intensive industries.

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12 United States Congress, Joint Economic Committee, *Technology and trade: indicators of United States industrial innovation*, United States Government Printing Office, Washington, D.C., 1986.

13 H. Brooks, "Technology as a factor in United States competitiveness in B.R. Scott and G.C. Lodge, ed., *United States competitiveness in the world economy*, Harvard Business School Press, Boston, 1986.

CHAPTER III

TECHNOLOGICAL COMPETITIVENESS AS A POLICY OBJECTIVE

16. The rising importance of technology as a determinant of the relative positions of countries and their firms in the world economy has affected thinking about the character of international trade. It has also prompted Governments to adopt strategies involving policy measures in a variety of fields aiming at building up their technological potential. Because of the implications of both of these interrelated developments for the evolving nature of the international trading system, they are the subject of the present chapter.

A. Changing perceptions of the determinants of trade

17. Under the standard static approach to trade theory underlying the international trading system and based on comparative advantage, mutually beneficial trade between countries is determined by differences between them. Given different endowments of labour, capital, natural resources, climate etc., each country will have a comparative advantage in producing and selling goods for which its endowments are best suited. By increasing specialization according to comparative advantage, free trade increases the productivity of all countries and makes possible universally higher standards of living. It follows that firms should discover what can be produced best in their geographical locales and that Governments should avoid all forms of protection. The theory relies on a number of simplifying assumptions.. Those which are directly or indirectly related to technology include diminishing returns or rising costs, perfect competition under an impersonal market mechanism, absence of externalities and identical technical knowledge in every country. Despite the unreality of these assumptions, the traditional theory continues to be empirically meaningful in the sense that a significant amount of world trade reflects the influence of contrasting country characteristics; for instance, some countries comparatively rich in land resources specialize in agricultural exports and some countries comparatively rich in capital specialize in capital-intensive exports. However, a growing volume of world trade in the past several decades has involved exchanges in which countries do not have an inherent comparative advantage based on resource endowments; for example, export of cut flowers from the Netherlands and steel from Japan. Mounting evidence, including that already presented in this note, suggests that international specialization is the outcome of real-world deviations from one or more of the afore-mentioned assumptions. Thus, it is recognized that:

(1) Technologies exist, especially in certain process industries, that do permit a reduction of unit costs over a large range of plant scales, thereby conferring advantages in overseas markets to firms situated in domestic markets of a size sufficient to allow for exploitation of economies of scale. Dynamic movement along downward-sloping learning curves also permits some firms to gain advantages over actual or potential competitors. Unit cost may also decline with output because of the extremely high sunk costs in the form of R and D expenditures associated with the generation of technology-intensive product innovations. The volume of sales or size of the market can greatly affect the average cost of producing the item. This may encourage policy makers to merge existing firms manufacturing these products into a single "national champion" and to create a national monopoly for this champion so as to further increase sales volume.[14]

(2) Perfect competition is absent when, for example, a firm succeeds in differentiating its products sufficiently to earn super-normal profits for a substantial period in a market, without inducing the entry of competitors. Governments, sometimes, may attempt to give their firms in a in-

[14] See K. Flamm, *Targeting the computer: government support and international competition*, the Brookings Institution, Washington, D.C., 1987; and S. Rosen, *Notes on rules and mechanisms governing international economic relations*, C. Michelsen Institute, Development Research and Action Programme, No. 127, Bergen, October 1981.

dustry a technological edge over existing international competitors through an interventionist policy that tries to "outguess" the market. Unwilling to accept the dictates of the market under the doctrine of comparative advantage, many countries are attempting to follow the example of Japan which managed to convert its economy from the production of labour-intensive goods such as textiles, to the manufacture of capital-intensive TV receivers and automobiles and into high technology areas of electronics, semiconductors and computers.

(3) Externalities in trade may arise when the benefits to the economy (domestically or globally) from technological advances in an industry, for instance airframe construction or semiconductors, exceeds the value of the extra net revenues internal to the industry. Countries with no particular direct cost advantage in producing their own semiconductors may, nevertheless, encourage their own firms to do so because of the wide use of semiconductors in various industries and the existence of positive feedback effects (on productive efficiency) from semiconductor manufacturers to semiconductor users when they can be in direct contact with one another.

(4) Finally, and most importantly, significant inter-firm technological differences exist in the same industry between different countries. Competitive advantage can be *created* through the accumulation of experience, a successful programme of R and D, technology transfer from firms in the same or in other industries and through imitation. It is not unusual that firms competing successfully in the same international industry do not all use the best-practice technology.

18. Since they are most often the rule than the exception, these market imperfections require new ways of thinking about the role of technology in international trade. The composition of a country's exports and the ability of its firms to capture market share is dictated less by its inherited array of productive resources than by whether its firms are able to transform these or other imported resources into goods and services possessing higher value added. A large portion of the volume and growth of trade is explained by international technology gaps resulting in important inter-country variations in techniques used and product characteristics. The size of these gaps is determined by international differences in innovative capabilities, access to innovations, corporate strategies and institutional conditions including government policies. Innovations contribute by enabling industries in one country to earn higher wages and profits than industries in other countries because of the monopoly prices they can obtain from the new products. But new industries decline or disappear sooner or later in the originating country as the innovated product is imitated and/or improved upon by some countries or because of lower-wage competition from other countries to which the technology is transferred, or by some combination of the two.[15] To continue to earn higher wages and profits, the originating country's industries are obliged to maintain their monopolistic edge by keeping the product cycle short and generating a continuous flow of innovations. Similarly, to remain competitive, i.e. to keep their own wages and profits from being driven down by competitors, industries from the other countries are obliged to continuously adopt the innovations generated by the industries in the originating countries. Thus, technological change affects the competitiveness of a country's industries via two main types of processes -- innovation and diffusion (imitation plus transfer of technology). The more rapid the change, the greater level of technological capacity required to stay competitive.

19. Through the operation of such mechanisms, some developing countries have achieved competitive success in some products. However, as discussed in chapter I, most of the developing countries have not been so successful. Thus, in terms of export performance, their benefits from participation in the international trading system have not been significant. Their exports of manufactures have been largely limited to traditional light manufactured and processed or semi-processed items that are experiencing slow growth of demand or are protected by non-tariff barriers of various kinds. Secondly, they lack the combination of technical skills, manufacturing expertise and organizational and marketing capabilities required in order to be able to make and fully exploit cost-reducing process innovations and quality improvements in their traditional areas of specialization. This same lack of skills and capabilities prevents them from shifting their export portfolios into new product lines and market niches where demand is growing faster than average. Finally, since the early 1980s, many developing countries have been adversely affected by the debt crisis and the general deterioration in the economic environment which has led to a sharp compression of the foreign and domestic savings available for investment in renewing their equipment

[15] See P. Krugman, "A model of innovation, technology transfer and world distribution of income", *Journal of Political Economy*, 1979.

and in acquiring the more modern technology needed for competing in export markets.[16] The shrinkage of savings has also put a constraint on related investment in higher education, research and the building of technological infrastructure generally in these countries.

B. Policy reactions

20. In recent years, in the face of market losses suffered by national enterprises, trade imbalances and structural adjustment problems, governments of most developed market-economy countries have become relatively less preoccupied with ensuring free competition and its corollary, free trade as with the competitiveness of their enterprises. The growing perception that technological advance is a key element in trade performance and economic growth has led governments of these countries to adopt a broad range of measures intended to stimulate such advance.[17] It has also led them to take measures to protect or bolster their national industries from competition arising from technological advances or catching-up by industries of other countries. Although the measures adopted are interrelated, and the dividing lines in any classification of them are thin, they may be divided for the sake of convenience into trade measures, innovation promotion measures and competition/intellectual property protection measures.

21. Earlier UNCTAD documentation, as well as a wide variety of studies prepared by Governments and the academic community, have drawn attention to the persistence of trade measures in the developed market-economy countries aimed at protecting their industries, but equally adaptable to the promotion or protection of domestic technology. These measures have included an increasing resort to the application of tariffs and quantitative restrictions (especially voluntary export restraints), countervailing and anti-dumping actions, and neglect of the unconditional most-favoured-nation clause in favour of conditional, bilateral and unilateral arrangements involving threats of retaliatory trade measures.[18]

22. Innovation or industrial promotion measures have included most notably government sponsorship of applied research; the granting of fiscal or other incentives for R and D; grants and soft loans for the establishment of new industries; and public procurement policies. There is a growing perception among other developed countries that such support may provide an unfair advantage in international competition to the domestic industries of the countries concerned. These policies may, therefore, have a potential for contributing to future trade disputes, especially in those cases where there is room for different interpretations as to whether it is innovation or production that is being supported or subsidized.[19]

23. Other governmental measures adopted in these countries have aimed at promoting the technological edge of domestic enterprises by restructuring the legal framework governing competition among them, and by enlargement or strengthening of the patent or copyright privilege. The application of laws on mergers, on R and D collaboration among enterprises, and on restrictive practices in licensing agreements, have been liberalized. The scope and time coverage of intellectual property protection has been strengthened or extended, particularly in respect of new technologies in informatics, telecommunications and biotechnology in which it is argued that the possibility of legally protecting easily copied technologies was unclear or non-existent.

24. However, since national regimes of intellectual property protection are territorially limited, bilateral and multilateral initiatives have been undertaken aimed at ensuring world-wide protection of technological assets through the harmonization in all important respects of the standards of protection prevailing in all countries. These initiatives have been undertaken despite a pervasive uncertainty about the appropriate type and scope of intellectual property protection for particular technologies. For the first time, a linkage between adequate and effective intellectual property protection in other countries, and market access for their goods has been established. The threat of trade retaliation has sufficed to induce a number of developing countries to change their intellectual property regimes. In a few cases, failure to make the changes suggested has led to actual

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[16] "Recent trends in international technology flows and their implications for development" (TD/B/C.6/145), UNCTAD, 18 August 1988.

[17] See "Technology-related policies and legislation on a changing economic and technological environment" (TD/B/C.6/146).

[18] See, in particular, TD/328/Rev.1.

[19] The Airbus dispute between the European Economic Community and the United States is a case in point.

retaliation.[20]

25. The overall objectives of such measures would seem to be: (a) the appropriation of new technologies and their incorporation into the intellectual property protection system; (b) prevention of the unwanted diffusion of the most advanced technologies to others on competitive or strategic grounds and/or of the contribution to their indigenous technological capacities; (c) the maximization of rent on older saleable technologies; and (d) the control of those "knowledge-intensive" producer services associated with the adaptation and application of new technologies.

26. Similar concerns relating to the promotion of innovation have gained ground in some developing countries, and a few of the more technologically advanced ones have recently undertaken systematic programmes of support for industrial research and innovation. However, in most of the developing countries, the pursuit of such policies is severely constrained by lack of resources, weaknesses in the scientific and industrial base, and lack of links between research and productive activities. In most developing countries, foreign investment and technology transfer continue to be relied upon as the main source of technological innovation, and the policy framework governing these areas plays an important role in influencing the pace and direction of domestic technology accumulation. Despite (with some exceptions) the liberalization of foreign investment and technology transfer policies that has taken place in developing countries in the 1980s, and the correspondingly greater emphasis on promotion rather than control, some aspects of many developing countries' policies in these areas continue to be perceived by transnational enterprises as conflicting with their global competitive strategies or by industrialized countries as conflicting with their trading and technological interests. Such aspects include, for example, controls on the use of patents exclusively for the maintenance of import monopolies, controls on restrictions in licensing agreements, and local content requirements. This has led, as noted above, to bilateral and multilateral pressures to change these policies, and trading frictions where such change does not occur.

27. Thus, the technology-related policies have led, or have the potential of leading, to conflicts entailing an erosion of the multilateral trading system embodied in GATT. These conflicts have occurred or may occur just as much among developed countries, as between developed and developing countries, but the bargaining power of developing countries caught up in such conflicts is of course weaker. Some of the issues leading to these conflicts have been raised in the current round of multilateral trade negotiations. It is inevitable that the trading system must take into account the ever closer links between trade and technology policies. However, it is important that such a system should be capable of fully responding to the need for technological development of technologically weak countries, particularly the developing countries. Of great relevance here are the issues raised in the negotiations within the United Nations on the international transfer of technology, and on transnational corporations, as well as in the Diplomatic Conference for the Revision of the Paris Convention on Industrial Property.

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[20] The United States Omnibus Trade Competitiveness Act of 1988 provides for trade retaliation under Section 301 of the Trade Act of 1974, as amended, against countries which are perceived to deny adequate and effective intellectual property protection to United States firms. Trade restrictive action against Brazil was recently taken under this provision. *International Trade Reporter*, Bureau of National Affairs, Inc., Washington, D.C., 26 October 1988.

CHAPTER IV

TECHNOLOGICAL CHANGES AND SYSTEMIC ASPECTS OF INTERNATIONAL TRADE

28. As has been noted above, there is the growing awareness that technological competitiveness has become a significant determinant of a country's position in world markets, a product of the capacity to create, adapt, appropriate, accumulate, improve and apply technology. The success of those countries which have significantly improved their performance in world trade can largely be attributed to the technological capacity which has enabled them: (a) to move into sectors of high demand, particularly in those entirely new product sectors which usually, as noted above, involve a high R and D content; and/or (b) to apply advanced technological processes in order to improve their competitive position by increasing exports in more traditional, less rapidly growing sectors at the expense of their competitors (e.g. Brazil in steel and agriculture) or reducing their import dependence (e.g. the United States through the application of non-ferrous scrap recovery technologies). Many of the policy responses to the impact of technology on international trade as described in chapter III would not seem compatible with the objective of a strengthened and improved international trading system supportive of the development of developing countries as foreseen in the Final Act of UNCTAD VII. While more secure and improved access to markets, and the maintenance of the momentum toward increased trade liberalization is essential to such efforts, such access will provide little meaningful benefits if, at the same time, developing countries are deprived of the possibilities of upgrading their level of technological competitiveness so essential for their achieving a dynamic role in international trade.

29. The international trading community must address the strains on the trading system caused by the dominant role of technology in establishing international competitive positions and by the threat posed by efforts to appropriate new technologies, to increase monopoly rents, and to question the legitimacy of measures by developing countries to support the development of indigenous technological capacities. Stricter rules are probably required to guard against the adverse trade effects of the abuse of monopoly positions established under intellectual property rights, the flows of counterfeit goods, and the possibility of coercive measures.

30. An open, improved and strengthened trading system will be more meaningful if it provides opportunities to developing countries to enlarge their share of world trade. This would call for, on the one hand, more secure and improved access to markets, particularly a reduction in the scope for imposing discriminatory measures and trade harassment against new entrants. However, such action would have to be combined with internationally adopted measures aimed at facilitating the transfer of technology to developing countries (such as in the context of the draft UNCTAD Code of Conduct on the Transfer of Technology, and of the issues raised in the Diplomatic Conference on the Revision of the Paris Convention for the Protection of Industrial Property under WIPO). It will be necessary to ensure a balance between the rewards provided to inventors and the corresponding costs to users of the technologies resulting from inventions, especially the costs borne by developing countries. It would also have to reduce the possibilities for the abusive use of intellectual property rights. In addition, the rights of developing countries to develop their indigenous technological capacities should be clearly recognized and reinforced, including the sovereign right of promoting and maintaining intellectual property legislation compatible with their development needs, strategies and policies.

31. In addition to the problems presented by certain govermental and corporate policies, the access of developing countries to imported technology is presently jeopardized by indebtedness and poor economic conditions domestically and internationally.[21] An improvement in these conditions is a prerequisite for attracting an increased flow of technology to their economies. It is also necessary for restoring the level of domestic fixed capital formation, thereby making it possible for their enterprises to raise productivity and invest in the new technologies that are associated with

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[21] See TD/B.C.6/145, *op.cit.*

the manufacture of products capable of meeting the price/quality standards set by the international market.

32. Besides, for a large number of developing, especially least developed or lower-income, countries whose relative share of foreign direct investment, capital goods imports and other types of technology inflows are particularly low, additional multilateral support is needed. Part of the answer could be an increase in funding for technology transfer. Investment projects supported by multilateral financing institutions could be broadened to include technological capacity building and skill formation. Support for investment in physical plant and equipment requires a parallel effort to develop the kinds of enterpreneurial, organizational and managerial capabilities that are needed in order to carry out and operate such investment and, more significantly, to react to the effects of technological change on world markets. An important contribution would be to assist developing countries to strengthen their service sectors in order to promote their ability to innovate, to penetrate world markets and to derive value added from their exports.

Annex table 1

Growth of exports: Comparison of growth rate of selected countries or territories with growth rate of world exports

A. Period 1970 - 1980

Region or major analytical group of origin	Deviation from world growth rate						
	Below world average by:				Above world average by:		
	More than 7 per cent	3 - 6 per cent	1 - 2 per cent	World average	1 - 2 per cent	3 - 6 per cent	More than 7 per cent
World				World (20%) [a]			
Developed market-economy countries (DMECs)			DMECs (19%) [a]				
		Australia Canada New Zealand Portugal Sweden	Belgium Denmark Germany, F.R. United Kingdom United States	Austria Finland France Italy Netherlands South Africa Switzerland	Iceland Israel Japan Norway	Greece Ireland Spain	
Developing countries						Developing countries (26%) [a]	
America				America (21%) [a]			
	Guyana Jamaica Nicaragua Panama	Chile Dominican R. Grenada Peru	Argentina Barbados Belize Costa Rica El Salvador Honduras Paraguay St. Vincent and Grenadines Uruguay	Bolivia Colombia Guatemala Haiti Venezuela	Brazil	Cuba Mexico Trinidad and Tobago	Bahamas Ecuador Greenland

Annex table 1 (continued)

A. Period 1970 - 1980

Region or major analytical group of origin	Deviation from world growth rate						
	Below world average by:				Above world average by:		
	More than 7 per cent	3 - 6 per cent	1 - 2 per cent	World average	1 - 2 per cent	3 - 6 per cent	More than 7 per cent
Africa					Africa (22%) [a]		
	Angola Benin Cape Verde Central African Republic Comoros Djibouti Egypt Eq. Guinea Ethiopia Gambia Ghana Liberia Madagascar Mauritania Mozambique Reunion Sierra Leone Sao Tome and Principe Sudan Uganda United Rep. of Tanzania Zaire Zambia Zimbabwe	Chad Burundi Guinea Bissau Kenya Malawi Morocco Senegal Somalia Swaziland	Burkina Faso	Cameroon Mali Mauritius Rwanda Togo	Côte d'Ivoire Lesotho Libyan Arab Jamah.		Algeria Botswana Congo Gabon Guinea Niger Nigeria Seychelles Tunisia

Annex table 1 (continued)

A. Period 1970 - 1980

Region or major analytical group of origin	Deviation from world growth rate						
	Below world average by:				Above world average by:		
	More than 7 per cent	3 - 6 per cent	1 - 2 per cent	World average	1 - 2 per cent	3 - 6 per cent	More than 7 per cent
Asia							Asia (30%) [a]
	Bangladesh Lebanon Maldives Nepal Pakistan	Burma Dem. Yemen India Sri Lanka Turkey Yemen	Cyprus Lao P.D.R. Philippines		Afghanistan Hong Kong	Iran Kuwait Malaysia Thailand	Bahrain Brunei Indonesia Iraq Jordan Korea, Rep. of Oman Qatar Saudi Arabia Singapore Syrian Arab Rep. Taiwan Province of China U.A. Emirates
Socialist Countries of Eastern Europe (SCEE)			SCEE (18%) [a]				
	Hungary	Czechoslovakia German D.R.	Bulgaria Poland	Romania	U.S.S.R.		
China					China (20%) [a]		

Annex table 1 (continued)

B. Period 1980 - 1987

Region or major analytical group of origin	Deviation from world growth rate						
	Below world average by:			World average	Above world average by:		
	More than 7 per cent	3 - 6 per cent	1 - 2 per cent		1 - 2 per cent	3 - 6 per cent	More than 7 per cent
World				World (2%) [a]			
Developed market-economy countries (DMECs)		South Africa	United States	Australia Norway United Kingdom	DMECs (4%) [a] Belgium Finland France Greece Netherlands New Zealand	Austria Canada Denmark Finland Germany, F.R. Iceland Israel Italy Japan Spain Sweden Switzerland	Ireland Portugal
Developing countries		Developing countries (-2%) [a]					
America		America (-3%) [a]					
	Bahamas Bolivia Dominican Rep. El Salvador Guatemala Guyana Jamaica Nicaragua Peru Trinidad and Tobago Venezuela	Argentina Barbados Belize Ecuador Haiti Panama	Chile Honduras Uruguay	Costa Rica Greenland Mexico Paraguay	Brazil Cuba	Colombia Grenada	St. Vincent and Grenadines

Annex table 1 (continued)

B. Period 1980 - 1987

Region or major analytical group of origin	Deviation from world growth rate						
	Below world average by:				Above world average by:		
	More than 7 per cent	3 - 6 per cent	1 - 2 per cent	World average	1 - 2 per cent	3 - 6 per cent	More than 7 per cent
Africa	Africa (-7%) [a]						
	Algeria Cameroon Lesotho Liberia Libyan Arab Jamahiriya Mozambique Niger Nigeria Sao Tome and Principe Somalia Swaziland Togo United Rep. Tanzania Zimbabwe	Benin Burkina Faso Congo Kenya Madagascar Sierra Leone Tunisia	Angola Central African Republic Guinea Guinea Bissau Malawi Senegal	Côte d'Ivoire Ethiopia Morocco Reunion Zaire	Chad Egypt Rwanda	Cape Verde Comoros Eq. Guinea Gambia Ghana Mali Uganda	Botswana Burundi Djibouti Mauritania Mauritius Seychelles

Annex table 1 (concluded)

B. Period 1980 - 1987

Region or major analytical group of origin	Deviation from world growth rate						
	Below world average by:			World average	Above world average by:		
	More than 7 per cent	3 - 6 per cent	1 - 2 per cent		1 - 2 per cent	3 - 6 per cent	More than 7 per cent
Asia		Asia (-3%) [a]					
	Afghanistan Bahrain Brunei Burma Dem. Yemen Indonesia Iran (Islamic Rep.) Iraq Kuwait Lebanon Oman Qatar Saudi Arabia Syrian Arab R. United Arab Emirates Yemen	Philippines Lao P.D.R.	Cyprus	Jordan	India Singapore Sri Lanka	Bangladesh Malaysia Nepal Pakistan Thailand	Hong Kong Korea, Rep. of Maldives Taiwan Province of China Turkey
Socialist Countries of Eastern Europe (SCEE)					SCEE (3%) [a]		
		Poland	Hungary Romania		U.S.S.R.	Bulgaria Czechoslovakia Germany, D.R.	
China							China (10%) [a]

Source: UNCTAD secretariat trade tapes. The growth rates are exponential trend growth rates for the periods specified.

a Figures in parentheses are average annual growth rates of the respective groupings.

Annex table 2

R and D intensity category, market shares and growth rates of developing countries' exports of manufactures to developed market-economy countries

R and D intensity category/ Product group	Market share (%)				Value ($ billion)	Growth rate (%)		
	1970	1975	1980	1987	1987	1970-75	1975-80	1980-87
High R and D	***2.57***	***6.15***	***9.48***	***13.10***	***33.6***	***43.1***	***30.6***	***15.4***
Aerospace	1.42	2.77	3.94	3.76	1.03	30.6	28.6	7.2
Office machines and computers	1.33	6.70	3.84	14.10	5.9	67.6	7.3	41.8
Electronic components	12.03	22.31	29.89	27.67	7.5	40.0	31.5	10.5
Telecommunication equipment	4.86	10.79	19.03	21.96	5.1	44.6	33.4	13.9
Drugs and medicine	6.94	8.24	6.94	4.02	0.3	24.2	9.8	-0.1
Scientific instruments	1.32	5.44	9.93	9.38	3.4	59.5	34.9	7.3
Electrical machinery	1.91	5.16	8.54	15.96	4.6	46.2	30.5	19.5
Non-electrical machinery	1.63	3.37	5.82	13.83	4.1	38.2	28.2	24.9
Chemicals	.39	.53	3.89	4.75	1.7	30.5	85.9	10.2
Medium R and D	***4.47***	***4.56***	***6.51***	***9.57***	***60.3***	***19.7***	***27.3***	***14.8***
Motor vehicles	0.22	0.59	0.92	3.58	7.1	45.9	28.9	35.1
Other chemicals	4.48	3.96	4.34	5.43	6.6	16.9	21.3	10.0
Other manufacturing industries	20.89	18.56	19.82	29.18	17.1	15.3	30.1	12.7
Other non-electrical machinery	0.67	1.24	2.33	6.39	9.2	34.2	31.5	24.7
Rubber, plastics	6.10	5.94	8.18	13.32	3.8	22.4	26.3	16.9
Non-ferrous metals	31.84	35.18	43.59	35.32	1.6	10.7	24.4	-8.7
Other electrical machinery	5.51	10.10	15.93	23.04	13.7	35.8	27.9	10.6
Other scientific instruments	0.73	2.19	4.77	7.70	1.1	46.0	40.7	16.4

Annex table 2 (concluded)

R and D intensity category, market shares and growth rates of developing countries' exports of manufactures to developed market-economy countries

R and D intensity category/ Product group	Market share (%)				Value ($ million)	Growth rate (%)		
	1970	1975	1980	1987	1987	1970-75	1975-80	1980-87
Low R and D	*15.77*	*18.66*	*21.21*	*23.59*	*130.4*	*23.6*	*19.4*	*6.3*
Stone, clay, glass	2.82	3.60	5.58	11.57	3.0	23.4	29.7	18.3
Food, drink, tobacco	25.95	25.69	20.33	17.32	19.3	17.9	8.4	1.6
Shipbuilding	3.98	4.01	13.66	28.46	1.5	23.1	27.6	12.8
Petroleum refineries	37.07	36.33	39.57	38.74	22.2	21.4	24.0	-3.1
Ferrous metals	2.92	3.49	6.13	11.09	5.4	21.0	25.7	10.8
Fabricated metal products	2.47	4.0	7.67	13.97	5.9	31.0	33.9	15.9
Paper and printing	0.94	1.51	3.02	4.05	2.4	29.1	33.1	11.9
Wood, cork, furniture	14.62	14.74	17.01	21.41	9.3	17.0	25.0	9.4
Textiles, clothing, footwear, leather	19.09	25.84	30.66	38.68	61.4	26.3	22.8	12.1

Source: UNCTAD secretariat calculations based on United Nations Statistical Office trade data (Comtrade).

Note: The classification to R and D intensity categories is based on the methodology described in *Selected science and technology indicators: recent results*, 1979-1986 (Paris: OECD, September 1986) and OECD "Commerce des produits de haute technologie première contribution à l'analyse statistique des échanges de produits de haute technologie" (DSTI/IND/84.60), Paris, 31 January 1985.